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A LABORATORY HAND-BOOK FOR DIETETICS

BY

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PREFACE.

INVESTIGATIONS into the quantitative requirements of the human body have progressed so far as to make dietetics to a certain extent an exact science, and to emphasize the importance of a quantitative study of food materials. It is the purpose of this little book to explain the problems involved in the calculation of food values and food requirements, and the construction of dietaries, and to furnish reference tables which will minimize the labor involved in such work without limiting dietary study to a few food materials.

Only brief statements of the conditions affecting food requirement have been made, the reader being referred to general textbooks on the subject of nutrition for fuller information, but such data have been included as seem most useful in determining the amount of food for any normal individual under varying conditions of age and activity.

Most of the available information in regard to food values is in terms of percentage composition, or of a single unit, as the 100-Calorie portion or the individual serving. The two latter are very useful, but too limited in scope and too inelastic in form to serve the needs of the general student. The former involves calculations which are always tedious and rob the student of time for a more comprehensive comparative study of food values. To lighten this labor, tables are included, giving the food values for the 100-Calorie Portion, which is taken as the Standard Portion in the sense that it serves as a convenient unit in building up a day's ration to yield a stated number of Calories; for the gram, which is the unit of weight for all scientific workers; for the ounce, the common unit of the small family group; and for the pound, the unit of the large family or institutional group. These tables have been in practical use for several years in the author's classes, and their value in relieving the student of monotonous clerical labor has been demonstrated.

While it is desirable to encourage the use of labor-saving devices, the student of dietetics ought to know the processes involved

115303

in dietary calculation, for these must be applied frequently in estimation of the food values of mixtures of food materials. Experience has shown that every step must be explained in detail, and no apology is offered for the exceeding simplicity of some of the problems presented.

No attempt has been made to give measures corresponding to different weights of food materials, because this is properly a part of laboratory work in dietetics, and ample space has been provided for records of original observations. Such data must always be used with caution, for there is great diversity in the capacity of measuring vessels unless officially standardized, and much more in foods of different qualities, localities, and seasons.

The author gratefully acknowledges the helpful criticism of Professor Henry C. Sherman in the preparation of this work.

TABLE OF CONTENTS.

PART I.

Page.

FOOD VALUES AND FOOD REQUIREMENT.................. 1
- The Composition of Food Materials.................. 1
- The Functions of Food.......................... 5
  - Food as a Source of Energy.................... 5
  - Food as Building Material..................... 6
  - Food in the Regulation of Body Processes......... 7
- Food Requirement.............................. 7
  - The Energy Requirement of Normal Adults....... 7
  - The Energy Requirement of Children............ 10
  - The Energy Requirement of the Aged........... 13
  - The Protein Requirement...................... 14
  - The Fat and Carbohydrate Requirement.......... 15
  - The Ash Requirement......................... 16

PART II.

PROBLEMS IN DIETARY CALCULATION.................. 17
- Studies in Weight, Measure and Cost of Some Common Food Materials.......................... 17
- Relation Between Percentage Composition and Weight.. 51
- Calculation of the Fuel Value of a Single Food Material 52
- Calculation of the Weight of a Standard or 100-Calorie Portion 53
- Food Value of a Combination of Food Materials....... 54
- Distribution of Foodstuffs in a Standard Portion of a Single Food Material.......................... 55
- Calculation of a Standard Portion of a Combination of Food Materials.............................. 56
- Analysis of a Recipe............................ 58
- Modification of Cows' Milk to a Required Formula.... 59
- Calculation of the Percentage Composition of a Food Mixture.................................... 61
- The Calculation of a Complete Dietary.............. 62
- Scoring of the Dietary........................... 68

PART III.

Page.
REFERENCE TABLES 71
  Refuse in Food Materials 71
  Conversion Tables—Grams to Ounces 73
  Conversion Tables—Ounces to Grams 74
  Conversion Tables—Pounds to Grams 74
  Food Values in Terms of Standard Units of Weight ... 75
  Ash Constituents in Percentages of the Edible Portion 109
  Ash Constituents in Standard or 100-Calorie Portions 113

APPENDIX.

THE EQUIPMENT OF A DIETETICS LABORATORY........... 116

A LABORATORY HAND-BOOK
FOR DIETETICS

PART I.

FOOD VALUES AND FOOD REQUIREMENT.

THE COMPOSITION OF FOOD MATERIALS.

The nutritive value of any food material depends largely upon its chemical composition. Through food must be supplied all the elements which enter into the structure of the living body, which afford energy for its activities, and which so regulate the vital processes as to produce that harmonious interaction which means health. The chief elements which food must furnish are carbon, hydrogen, oxygen, nitrogen, sulphur, phosphorus, iron, sodium, potassium, calcium, magnesium, and chlorine. The body can use these elements only in the form of certain definite compounds; charcoal and diamonds are forms of carbon, but no one would take them for food. The most important combinations of elements available for the welfare of the body are shown in the following table:

Carbon Hydrogen Oxygen	forming **Carbohydrates.**
Carbon Hydrogen Oxygen	forming **Fats.**
Carbon Hydrogen Oxygen Nitrogen Sulphur Phosphorus (sometimes)	forming **Proteins.**
Hydrogen Oxygen	forming **Water.**
Sulphur Phosphorus Chlorine Sodium Potassium Calcium Magnesium Iron	forming **Ash Constituents,** which exist partly as mineral salts and partly in combination with carbohydrates, fats, proteins and other organic compounds.

With the exception of water, which can be supplied independently of other substances in such quantities as may be necessary, the essential constituents of food are proteins, fats, carbohydrates, and ash constituents.

In case of many food materials, there is more or less inedible material, such as the rind of fruits, the shells of nuts, bone, connective tissue, and sometimes fat in meat, which is discarded as refuse. It is customary for food analysts to report their findings on a food which contains refuse in two ways:

1. As Purchased, the amount of material which is ordinarily rejected being included in the total weight on which the percentage of each constituent is calculated.

2. Edible Portion, the refuse being entirely discarded before taking the weight on which the calculations are made.

A single example will serve to make this clear. An average banana, weighing about five and one-half ounces, will lose on peeling nearly two ounces, or approximately thirty-five per cent of its original weight. The total weight of each of the foodstuffs in such a banana is as follows:

Water, ounces	Protein, ounces	Fat, ounces	Carbohydrate, ounces	Ash, ounces
2.69	0.04	0.02	0.79	0.03

If these values are expressed in percentages of the original weight of the unpeeled fruit (5.5 ounces), the results are reported "As Purchased":

Refuse,* per cent	Water, per cent	Protein, per cent	Fat, per cent	Carbohydrate, per cent	Ash, per cent
35.0	48.9	0.8	0.4	14.3	0.6

If they are expressed in terms of the peeled fruit (3.57 ounces), the results appear somewhat different, and are reported as "Edible Portion":

Refuse, per cent	Water, per cent	Protein, per cent	Fat, per cent	Carbohydrate, per cent	Ash, per cent
—	75.4	1.1	0.6	22.1	0.8

In which of the above ways food values shall be expressed is merely a matter of convenience, provided the amount of refuse is not far from the average. A greater degree of accuracy as to nutritive value is insured by first removing the inedible portion, and then basing calculations on the weight of edible substance, but it must be borne in mind that the refuse affects estimations of cost made in this way. Thus if three bananas are purchased for five cents, and are found to weigh one pound in their skins, the weight of edible material will be about ten ounces; at the rate of ten ounces for five cents, the cost per pound of edible material will be nearly eight cents. Knowing the percentage of refuse, we can convert the weight of edible material into weight as purchased by the following proportion:

---

* The average per cent of refuse in a number of the more common food materials is shown in Table XV.

Weight of edible portion : Per cent of edible portion : : x : 100.
x = weight of material as purchased.

Thus, in the case above,
Weight of edible portion   Per cent of edible portion
10.4 ounces   :   65   : : x : 100.
x = 16 (ounces of material as purchased).

Water is present in all food materials, with the exception of a few pure fats, sugars and starches. The amount may be anywhere from two to ninety-five per cent, crackers averaging about seven per cent, bread about thirty-five per cent, most meats from sixty to seventy-five per cent, and fresh fruits and vegetables from seventy-five to ninety-five per cent. Since water can be added to the diet without cost, its presence or absence is most significant from the economic standpoint. A pound of fresh tomatoes and one of rolled oats can often be bought for the same price, but the tomatoes will contain fifteen ounces of water and one ounce of dry matter, whereas the oats will furnish fifteen ounces of dry matter and one ounce of water; in other words, the dry matter in the tomatoes in this case may cost eighty cents per pound, while that in rolled oats costs five and one-third cents per pound.

Protein is not determined directly, but is estimated from the amount of nitrogen which the given material contains. The average amount of nitrogen in protein is estimated as about sixteen per cent. If we assume that sixteen parts of nitrogen correspond to one hundred parts of protein, then for one part of nitrogen, there will be six and one-fourth parts of protein. Analyses made in this way report the crude protein as "N × 6.25." This method is not strictly accurate for two reasons; first, because the nitrogen present may not be altogether in the form of true proteins, but partly as simpler compounds of lower value; second, because individual proteins differ considerably in the per cent of nitrogen which they contain, some having as low as fifteen per cent, and a number having seventeen to eighteen per cent. Hence, to secure strict accuracy, different factors are needed for the different food materials; but inasmuch as calculations of food values made on average analyses are only approximately correct in any given case, the convenient factor 6.25 has been widely adopted, and is satisfactory if it be borne in mind that estimations of protein in food materials made in this way tend to indicate somewhat more protein than is probably available to the body. For such reasons as these, it is customary in experimental work, to compare the intake and output of nitrogen rather than to try to express that in food in terms of protein.

Fat is determined by extraction of the food material with ether, and hence is more accurately designated "ether extract." Besides true fat and fatty acids, this extract may contain other acids, waxes, coloring matter or other substances. Thus the amount of fat is exaggerated, especially in some food materials low in fat, such as fresh fruits and green vegetables, in which as much as fifty per cent of the ether extract may be substances other than fat. In cases where the amount of fat is relatively greater, errors due to this cause are practically negligible.

Carbohydrates, as ordinarily reported, are estimated "by difference," that is, by subtracting the sum of the percentages of protein, fat, ash and water from one hundred. Here again, the results are only approximately accurate, partly because all the errors in the other estimations are charged against the carbohydrates, and partly because carbohydrates may be included which are not available for food, as woody fiber and certain gums.

Ash is obtained by burning off all the combustible substances and weighing the residue. It is chiefly significant in showing what proportion of a dry foodstuff is not available for fuel; consequently reports of total ash are not very important in dietary calculation. The nature of the mineral matter is, however, a matter of considerable importance, and while it is not necessary to calculate the total amount of each of the different mineral constituents in every dietary, familiarity with their distribution in food materials should be acquired by frequent reference to such data as in Tables XX and XXI.

THE FUNCTIONS OF FOOD.

The human body is a working machine, for which the fuel is food; it is an aggregation of living cells in which chemical changes are continually occurring, old material being thrown out to be replaced by new, which must be obtained from food; it is an organism capable of building itself up from a single cell by conversion of food into body substance. It cannot, however, perform these functions without the proper balance of chemical compounds in all its tissues and fluids, and these compounds must be derived from a well-balanced diet. It may be said, therefore, that food has three important functions; namely, to supply energy; to build body substance; and to regulate body processes.

FOOD AS A SOURCE OF ENERGY.

Proteins, fats and carbohydrates have the great common function of supplying the body with energy, which is the *power to do work*. This power is manifested in various ways, such as motion, heat, light, chemical or electrical activity. Our bodies are energy-transformers; their sole source of energy is food, and the most important result of the changes which foods undergo in the body is the evolution of energy in the form of work or heat. The work may be *internal*, as that of digestion, respiration, circulation, and muscular tension; or *external*, as in walking, running, or other muscular activity; the heat is chiefly a by-product of these various forms of work, but under certain circumstances, when heat loss is very rapid, energy may be converted into this form, to maintain the normal body temperature.

Since energy is easily transformed into heat, and this form is readily measured, a heat unit, the Calorie, has been adopted as the most convenient measure of energy. One Calorie is the amount of heat required to raise one kilogram (2.2 pounds) of water one degree Centigrade, or one pound of water four degrees Fahrenheit. Expressed in terms of work, it represents that required to lift one pound through the distance of 3087 feet or 3087 foot-pounds

The total energy value of each of the fuel foodstuffs (proteins, fats, and carbohydrates) has been determined by burning it in a calorimeter in pure oxygen, under such conditions that all the heat evolved is taken up by water surrounding the vessel in which the combustion occurs, and the increase in the temperature of the water measured by a delicate thermometer. In the body, combustion of protein is not quite so complete as in the calorimeter, and there are usually some losses due to failure of complete digestion of each kind of foodstuff, so that the available energy is somewhat less than the total energy value. In a healthy human being, on an ordinary mixed diet, the fuel value of each foodstuff is on the average as follows:*

Protein, 4 Calories per gram,
Fat, 9 Calories per gram,
Carbohydrate, 4 Calories per gram.

Knowing the percentage composition of any food material, it is possible by means of these factors to compute its probable yield of energy to the body, as illustrated in Problem III, page 52.

Food as Building Material.

During the period of growth, which extends over the first twenty-five years of life, the body increases in weight usually from fifteen to twenty times. The source of the new body substance is food. In adult life, growth ceases, except in special cases, as when the body tissues have been depleted through disease or accident or where unusual exercise or pregnancy induces muscle formation; but in all living substance there is a constant loss of old material, to be replaced by new, small in amount, but essential to life. Hence there is never a time when building material can be dispensed with entirely, though it becomes less prominent after maturity. The foodstuffs which play a specific rôle in body building are the proteins and certain ash constituents, the most important being phosphorus, iron, and calcium.

Protein supplies nitrogen, essential for the protoplasm of all active cells and especially for the making of muscle. It is also a source of sulphur for body protein.

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* Most of the calculations of fuel value previously made are slightly higher than those in this book, owing to the use of Rubner's factors (protein 4.1, fat 9.3, carbohydrate, 4.1) which are now known to allow too little for losses in digestion.

Phosphorus, like nitrogen, is essential to the development of every cell. It is also one of the chief elements giving rigidity to the bones. It occurs in chemical combination with protein and fat in milk and eggs, as simpler organic compounds in grains and legumes, and chiefly as inorganic salts in meat, fish, fruits and green vegetables. The organic forms, especially phospho-proteins and phospho-fats,seem to be used to the best advantage in body-building.

Iron is an essential element of the hemoglobin of the blood, and of all cell nuclei. Oxidation and cell development are therefore dependent on its presence. Food iron is in the form of iron-protein compounds,' found especially in egg yolk, green vegetables fruits, legumes and whole grains.

Calcium as building material is found chiefly in the bones, and teeth. It occurs in food in combination with protein, as in milk, or as inorganic salts in whole grains, legumes, fruits and vegetables.

Food in the Regulation of Body Processes.

The chief constituents of food participating in the regulation of body processes are the ash constituents and water.

The most important mineral elements besides phosphorus, iron, calcium and sulphur, are magnesium, potassium, sodium and chlorine. Upon the presence of the salts formed by these elements depend the neutrality of the blood, the acidity or alkalinity of the digestive juices, the solvent power and osmotic pressure of different body fluids, and the elasticity and irritability of nerve and muscle. They form such combinations as tend to protect the body against harmful substances when present, and to aid in their elimination.

FOOD REQUIREMENT.

The Energy Requirement of Normal Adults.

The first requirement of the body is for energy to replace that lost in its constant internal work, and more or less irregular and variable external work. The greater the amount of muscular work, the higher the energy requirement. By use of the following tables it is possible to determine with considerable accuracy the energy requirement of any adult.* Tables I and II give the aver-

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* For detailed discussion of the factors influencing the energy requirement, and interpretation of the terms indicating different degrees of muscular activity consult Sherman's Chemistry of Food and Nutrition; Lusk's Science of Nutrition; or Von Noorden's Metabolism and Practical Medicine.

TABLE I.

SYMONDS'S TABLE OF HEIGHT AND WEIGHT FOR MEN AT DIFFERENT AGES.*

(Based on 74,162 accepted applicants for life insurance.)

Ages	15–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69
5 ft. 0 in.	120	125	128	131	133	134	134	134	131	
1 "	122	126	129	131	134	136	136	136	134	
2 "	124	128	131	133	136	138	138	138	137	
3 "	127	131	134	136	139	141	141	141	140	140
4 "	131	135	138	140	143	144	145	145	144	143
5 "	134	138	141	143	146	147	149	149	148	147
6 "	138	142	145	147	150	151	153	153	153	151
7 "	142	147	150	152	155	156	158	158	158	156
8 "	146	151	154	157	160	161	163	163	163	162
9 "	150	155	159	162	165	166	167	168	168	168
10 "	154	159	164	167	170	171	172	173	174	174
11 "	159	164	169	173	175	177	177	178	180	180
6 ft. 0 "	165	170	175	179	180	183	182	183	185	185
1 "	170	177	181	185	186	189	188	189	189	189
2 "	176	184	188	192	194	196	194	194	192	192
3 "	181	190	195	200	203	204	201	198		

* Medical Record, Sept. 5, 1908.

TABLE II.

SYMONDS'S TABLE OF HEIGHT AND WEIGHT FOR WOMEN AT DIFFERENT AGES.*

(Based on 58,855 accepted applicants for life insurance.)

Ages	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64
4 ft. 11 in.	111	113	115	117	119	122	125	128	128	126
5 " 0 "	113	114	117	119	122	125	128	130	131	129
1 "	115	116	118	121	124	128	131	133	134	132
2 "	117	118	120	123	127	132	134	137	137	136
3 "	120	122	124	127	131	135	138	141	141	140
4 "	123	125	127	130	134	138	142	145	145	144
5 "	125	128	131	135	139	143	147	149	149	148
6 "	128	132	135	137	143	146	151	153	153	152
7 "	132	135	139	143	147	150	154	157	156	155
8 "	136	140	143	147	151	155	158	161	161	160
9 "	140	144	147	151	155	159	163	166	166	165
10 "	144	147	151	155	159	163	167	170	170	169

* McClure's Magazine, Jan. 1909.

age weight in proportion to height, for men and women of different ages, and Tables III, IV, V and VI afford data for calculating the energy requirement according to this weight. Thus a man weighing 70 kilograms, at light exercise, will require 2450–2800 Calories according to Table III, or if we state his day's activity more definitely, assuming that he sleeps 7 hours, works at his desk 10 hours, does exercise equivalent to walking 7 hours, we may then calculate his requirement according to Table IV:

Sleeping, 7 × 65 Calories = 455 Calories.
Sitting, 10 × 100 Calories = 1000 Calories.
Walking, 7 × 170 Calories = 1190 Calories.
Total for day, 2645 Calories.

This corresponds very well with our previous estimate, and with Atwater's average for a sedentary occupation, Table V.

If the subject under consideration is an adult of normal physique but weighs more or less than 70 kilograms, the total energy requirement is calculated as proportional to weight. Thus for a person of 55 kilograms (man or woman), with the same degree of activity, the proportional energy requirement would be 2078 Calories. In the strictest sense the smaller subject would probably have a somewhat larger energy output per unit of weight, as metabolism is more nearly proportional to surface than to weight.

TABLE III.

Von Noorden's Allowance per Kilogram for Normal Nutrition of Young and Middle Aged Adults.

At complete rest	30–35 Calories per kilogram per day.
With light exercise	35–40 Calories per kilogram per day.
With moderate exercise	40–45 Calories per kilogram per day.
With hard muscular labor	45–60 Calories per kilogram per day.

TABLE IV.

Atwater and Benedict's Hourly Factors.*

Man sleeping	65 Calories per hour.
Man sitting at rest	100 Calories per hour.
Man at light muscular exercise	170 Calories per hour.
Man at active muscular exercise	290 Calories per hour.
Man at severe muscular exercise	450 Calories per hour.
Man at very severe muscular exercise	600 Calories per hour.

* Calculated for the average man weighing 70 kilograms (154 pounds).

TABLE V.

Atwater's Estimate According to Degree of Muscular Activity.*

Man at moderately active muscular work (like carpenter or mason)	3400 Calories.
Man at hard muscular work (1.2 the food of a man moderately active)	4080 Calories.
Man at light muscular work (0.9 the food of a man moderately active)	3060 Calories.

Man at sedentary occupation Woman at moderately active work (0.8 the food of a man moderately active)	2720 Calories.
Woman at light work (0.7 the food of a man moderately active)	2380 Calories.

*Calculated for the average man weighing 70 kilograms (154 pounds) and the average woman weighing 56 kilograms (123 pounds).

TABLE VI.

TIGERSTEDT'S ESTIMATE ACCORDING TO OCCUPATION.*

Occupation	Calories per Day
Shoemaker	2001–2400
Weaver	2401–2700
Carpenter or mason	2701–3200
Farm laborer	3201–4100
Excavator	4101–5000
Lumberman	Over 5000

* Calculated for a man of average weight, 70 kilograms or 154 pounds.

THE ENERGY REQUIREMENT OF CHILDREN.

The energy requirement of children is higher in proportion to body weight than that of adults. In youth the metabolism is more intense and there is a great storage of food materials in the body in the process of growth, as is evident from the fact that a baby doubles in weight in the first 180 days of life. The muscular activity of children is also frequently greater than that of adults, so that their food requirement may be increased further in this way.

To calculate the energy requirement of any child, it is necessary to know the requirements per unit of weight at different stages of growth, *i. e.*, different ages, and the weight of the normal child at corresponding periods. Such data will be found in Tables VII–XI. Thus a normal boy, five years old, 42 inches high, should weigh 41 pounds or 18.6 kilograms, and will require at least 80 Calories per kilogram, making a total per day of 1488 Calories. With more than moderate activity, as much as 90 Calories per kilogram may be required, a total of 1674 per day.

If a child is below normal weight, he should not be fed according to his present weight, but regarded as undernourished and treated as nearly as possible in harmony with what his weight ought to be. Standards for children should in general be considered as representing the minimum rather than the maximum food requirement.

TABLE VII.

AVERAGE ENERGY REQUIREMENT OF CHILDREN PER KILOGRAM OF BODY WEIGHT

Age in Years	Calories per Kilogram
Under 1	100
1–2	100–90
2–5	90–80
6–9	80–70
10–13	70–60
14–17	60–45

TABLE VIII.

AVERAGE TOTAL ENERGY REQUIREMENT OF CHILDREN.

Age in Years		Total Calories
1–2		900–1200
2–5		1200–1500
6–9		1400–2000
10–13		1800–2200
14–17	girls	2200–2600
	boys	2500–3000

TABLE IX.

AVERAGE WEIGHTS OF CHILDREN FROM BIRTH TO THE FIFTH YEAR.*

Age		Weight	
		Pounds	Kilograms
At birth		7.5	3.4
6 months		15.0	6.8
1 year		21.0	9.5
2 years	boys	30.3	13.8
	girls	29.2	13.3
3 years	boys	34.9	15.9
	girls	33.1	15.0
4 years	boys	37.9	17.2
	girls	36.3	16.5

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* Sill, New York Medical Journal, January 14, 1911, p. 70 (from tables by Koplik).

TABLE X.

Average Weight and Height of Boys at Different Ages.*

The figures represent weight in pounds.

Ht. In.	5 Yrs.	6 Yrs.	7 Yrs.	8 Yrs.	9 Yrs.	10 Yrs.	11 Yrs.	12 Yrs.	13 Yrs.	14 Yrs.	15 Yrs.	16 Yrs.	17 Yrs.	18 Yrs.	19 Yrs.	20 Yrs.
39	35															
40	38	36														
41	39	39														
42	41	41														
43	42	42	42													
44	46	44	43													
45		46	46	45												
46		48	48	48												
47			49	50	50											
48			54	53	53	53										
49				54	55	55										
50				57	58	58										
51				59	60	60	61									
52					62	62	61	63								
53					62	65	65	67	67	67						
54					65	68	68	70	71	71						
55						69	71	75	75	76						
56						71	77	76	78	79	79					
57							77	79	80	82	82					
58							78	84	85	86	87					
59								84	86	90	91					
60								85	91	94	95	90				
61									98	97	99	96				
62									99	103	106	104	104			
63									100	107	112	112	110	118		
64										114	118	120	117	120	120	
65										122	119	122	122	120	126	125
66											121	125	125	126	129	139
67											128	129	128	131	134	132
68											133	133	130	136	136	136
69											134	136	139	139	139	139
70											136	140	143	143	144	145
71												140	146	146	146	146
72															149	154
73																165

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* Taken from the Ninth Yearbook of the National Society for the Study of Education, Part I, *Health and Education*, by Thomas Denison Wood, A.M., M.D., 1910, with the permission of the author.

TABLE XI.

Average Weight and Height of Girls at Different Ages.*

The figures represent weight in pounds.

Ht. In.	5 Yrs.	6 Yrs.	7 Yrs.	8 Yrs.	9 Yrs.	10 Yrs.	11 Yrs.	12 Yrs.	13 Yrs.	14 Yrs.	15 Yrs.	16 Yrs.	17 Yrs.	18 Yrs.	19 Yrs.	20 Yrs.
39	34															
40	37	35														
41	38	37														
42	41	39	39													
43	41	41	42													
44	45	43	44	42												
45		45	45	45												
46		48	47	47												
47			50	49	49											
48				51	51											
49				53	53	54										
50				56	56	57										
51					59	58	60									
52					63	62	62	63								
53						64	63	66	65							
54						69	68	69	68							
55							70	71	73							
56							75	75	76	78						
57								78	80	83						
58								83	86	88	89					
59								88	89	93	97	100				
60								94	94	96	100	104	109	103	99	99
61									99	100	102	109	109	106	105	111
62									104	104	106	111	110	107	111	114
63										107	109	116	110	112	113	114
64										112	118	116	117	114	119	115
65										114	118	121	125	120	123	125

* Taken from the Ninth Yearbook of the National Society for the Study of Education, Part I, *Health and Education*, by Thomas Denison Wood, A.M., M.D., 1910, with the permission of the author.

The Energy Requirement of the Aged.

In old age, the activity of the cells diminishes, decreasing the rate of metabolism and the amount of internal work. External work is usually less than in middle life, and the ability of the body to deal with an excess of food is lessened. For these reasons, the energy requirement per unit of weight gradually declines as old age comes on, usually after the 60th year, and sometimes earlier. While senility cannot be measured exactly in years, we may, for convenience, divide this period into three parts, (1) from 60 to 70; (2) from 70 to 80; (3) from 80 to the end of life, as a basis for estimating food requirements.

The energy requirement is most satisfactorily calculated by using one of the methods suggested for obtaining the energy requirement of an adult* when the weight of the individual is known and suitable allowance is made for lessened activity. After the requirement has been calculated as if for a middle aged person, a deduction should be made for the decreased metabolism according to the following table, adapted from suggestions by Von Noorden.

TABLE XII.

VON NOORDEN'S REDUCTIONS IN ENERGY REQUIREMENT IN OLD AGE.

Age in Years	Per Cent of Reduction
60–70	10
70–80	20
80—	30

THE PROTEIN REQUIREMENT.

The protein requirement cannot be stated with the same exactness as the energy requirement. We know that some proteins will support growth; others serve merely to maintain the body at constant weight, and still others will by themselves neither maintain nitrogen equilibrium nor support growth. It is necessary therefore to choose proteins with some care if we try to limit the amount very closely, especially in childhood when they are so important for growth; or to take food materials of many kinds, so that different types of protein are represented in the diet.

The total amount of protein required is independent of the amount of muscular activity. In the adult it depends rather upon the amount of active tissue in the body. In the case of an adult man of ordinary physique weighing seventy kilograms, while the energy requirement may vary from 2400 to 4000 Calories according to occupation, a protein supply of about one gram per kilogram of body weight per day will be adequate. In the child the requirement is much higher in proportion to weight, owing to the use of protein as building material, especially for the muscles. At the time of most rapid growth nature provides about two and one-half grams of protein per kilogram of body weight per day. This is about ten per cent of the fuel requirement per kilogram, and it will be observed that a man at moderately active work, taking one gram of protein per kilogram is also getting about ten per cent of his calories in the form of protein. In old age, when new body substance is not being built, the existing cells are less active, and the body is less capable of disposing of an excess, so that less than one gram per kilogram of body weight is needed, we find that there is also a decreased demand for total fuel, affording again a parallelism between energy and protein requirement. It seems safe to say therefore, that except at complete rest, from ten to fifteen per cent of the total fuel in the form of protein is sufficient for any age when the energy requirement is fully met.

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* Cf. Tables I–VI.

When the protein in the diet is excessively high, it raises the metabolism without any beneficial and possibly with harmful effects. It is at least a wasteful excess, and should be avoided. On the other hand, while it is possible to satisfy the requirements for nitrogen with less than ten per cent of the fuel in the form of protein, such a supply does not afford much reserve for such emergencies as loss in digestion, or inability of the body to utilize to good advantage the type of protein supplied, and is usually inadvisable.

The Fat and Carbohydrate Requirement.

Assuming that from ten to fifteen per cent of the total fuel is derived from protein in satisfying the nitrogen requirement of the body, the remainder of the daily fuel supply will have to be provided from carbohydrates and fats. The amount of fat which can be digested differs with the individual and the form in which it is taken, but the average man's maximum capacity for digestion of fat is about 200 grams per day. The amount of carbohydrates which can be taken to advantage depends largely upon the form, starch being capable of good digestion in amounts up to or even above 500 grams per day. The assimilation limits for sugar vary with the kind, but are lower than that for starch.

Under certain circumstances carbohydrates have a greater protein-sparing power than fats, but unless more than one-half of the total calories of the day's ration be derived from fats, the protein sparing action of a fat calorie or a carbohydrate calorie is practically the same. In the ordinary diet of a healthy individual the carbohydrates tend to predominate, so that there is no necessity for estimating fat and carbohydrate separately; the relative proportions will be determined largely by questions of bulk and ease of digestion. In special cases it is sometimes necessary to calculate each separately, as in diabetes where the carbohydrate must be limited. The tables of food values will make these calculations comparatively simple.

THE ASH REQUIREMENT.

In a diet selected from a wide range of food materials, or a more limited one containing some kind of fruit and some green vegetable every day, and having milk as a prominent constituent, the needs of the individual for body-building and body-regulating ash constituents will probably be satisfactorily met. The ash requirement has not yet been determined with the same accuracy as the energy requirement, but there is abundant evidence that attention must be paid to the mineral elements of the diet, some of which are as important as protein even though needed in much smaller amounts. The ones which it seems most unwise to leave to chance are phosphorus, iron and calcium, diets which supply protein and fuel in adequate amounts not necessarily carrying a sufficiency of all of these. The quantities per day believed to be adequate for an average healthy man are as follows:

Phosphoric acid	2.75 grams
Calcium oxide	0.7 gram
Iron	0.015 gram

The calculation of the ash constituents is laborious, and inasmuch as the amounts required are comparatively small, it is simpler to see that the foods rich in these elements are well represented, *i. e.*, milk, eggs, whole grains, peas, beans, green vegetables and fruit, any excess of ash not being likely to do harm.

When for any reason there is scarcity of the above foods, or a diet especially rich in any particular ash constituent is desired, the quantitative estimations of the various elements may be made by means of Tables XX and XXI.

PART II.

PROBLEMS IN DIETARY CALCULATION.

PROBLEM I.

STUDIES IN WEIGHT, MEASURE AND COST OF SOME COMMON FOOD MATERIALS.

In the following table (XIII) are grouped those common food materials which are purchased and used by measure more frequently than by weight. The food values are given for all the customary units of weight, namely, the gram for scientific accuracy, the ounce for the small family and the pound for the larger institution, the data being calculated, unless otherwise stated, from Bulletin 28, Office of Experiment Stations, U. S. Department of Agriculture, using the Atwater factors for energy values. Since estimates of food values made on average proximate analyses cannot be absolutely accurate, the number of digits in this table (and in Table XIX) has been limited to one or two decimal places except on the gram, where the food values serve also to indicate the percentage composition as given in the original report. These can be used in cases where the closest concordance in results is desired.

For weighing the food materials, a Harvard Trip Scale with weights from one gram to one-half kilogram will be found most satisfactory, although any reliable household scale accurate to one-fourth ounce can be used. A number of standard or 100-Calorie portions of food materials representing the different classes of foodstuff should be weighed, carefully measured, and the result recorded in the blank space provided in the measure column of the tables. The total weight of the market unit, as the quart, can or package, should also be recorded in the blank space under the data on food values, and the cost of this and the 100-Calorie portion recorded in the cost column. Other useful data are the weight of one cupful or one tablespoonful, etc., of foods used by these measures in cookery, such as flour, sugar, butter, and milk. Comparison of the cost of 100-Calorie portions will give a true idea of the relative economy of the different food materials as sources of fuel, and will save much time in dietary calculation. A complete record of a food material will appear as follows:

EXAMPLE OF A FOOD RECORD.

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Measure
		lb.	oz.	gms.						
Bread, white, miscellaneous.	......	......	......	1	0.093	0.012	0.527	2.59	......	......
	......	......	1	......	2.63	0.34	14.94	73.4	0.0041	......
	......	1	......	......	42.18	5.44	239.05	1174	0.0666	......
	1	......	1.36	38.6	3.6	0.46	20.39	100	0.0056	1 thick slice
	......	......	12.00	340.0	31.56	4.08	179.28	880	0.05	1 loaf

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.

Calculated principally from Bulletin 28, Office of Experiment Stations, U. S. Department of Agriculture.

A. P. denotes "as purchased."
E. P. denotes "edible portion."
S. P. denotes "standard" or "100-calorie" portion.

The Per Cent of Refuse in common food materials is given in Table XV.

When it is impractical to weigh certain food materials some idea of the relation between weight and measure may be gained by reference to tables in the following publications:

Flora Rose—Human Nutrition, Part I, Cornell University, 1909.
Locke—Food Values, New York, 1910.
Pattee—Practical Dietetics, New York, 1910.

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Almonds, A. P.				1	0.115	0.302	0.095	3.56		
			1		3.26	8.56	2.69	100.9		
		1			52.16	136.96	43.09	1614		
	1		0.99	28.1	3.23	8.49	2.67	100		
Almonds, E. P.				1	0.210	0.549	0.173	6.47		
			1		5.95	15.56	4.90	183.5		
		1			95.25	249.03	78.47	2936		
	1		0.54	15.5	3.24	8.48	2.67	100		
Apples, dried, A. P.				1	0.016	0.022	0.661	2.91		
			1		0.45	0.62	18.74	82.4		
		1			7.25	9.93	299.83	1318		
	1		1.21	34.4	0.55	0.75	22.74	100		

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Apples, fresh, A. P.				1	0.003	0.003	0.108	0.47		
			1		0.09	0.09	3.06	13.4		
		1			1.36	1.36	48.99	214		
	1		7.49	212.3	0.64	0.64	22.93	100		
Apples, fresh, E. P.				1	0.004	0.005	0.142	0.63		
			1		0.11	0.14	4.05	17.8		
		1			1.81	2.27	64.6	285		
	1		5.61	159.0	0.64	0.79	22.58	100		
Apricots, dried, A. P.				1	0.047	0.010	0.625	2.78		
			1		1.33	0.28	17.72	78.7		
		1			21.32	4.54	283.50	1260		
	1		1.27	36.0	1.69	0.36	22.50	100		
Apricots, fresh, A. P.				1	0.010		0.126	0.54		
			1		0.28		3.57	15.4		
		1			4.54		57.16	247		
	1		6.48	183.8	1.84		23.16	100		
Apricots, fresh, E. P.				1	0.011		0.134	0.58		
			1		0.31		3.80	16.4		
		1			4.99		60.78	263		
	1		6.08	172.4	1.89		23.10	100		

TABLE XIII.

Food Values of Food Materials Requiring Study of Weights and Measures, and of Comparative Cost on the Basis of Fuel Value.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Asparagus, canned, A. P.				1	0.015	0.001	0.028	0.18		
			1		0.43	0.03	0.79	5.1		
		1			6.80	0.45	12.70	82		
	1		19.49	552.5	8.29	0.55	15.47	100		
Asparagus, fresh, A. P.				1	0.018	0.002	0.033	0.22		
			1		0.51	0.06	0.93	6.3		
		1			8.16	0.91	14.96	101		
	1		15.89	450.5	8.10	0.90	14.85	100		
Bacon, smoked, A. P.				1	0.095	0.594		5.73		
			1		2.69	16.84		162.3		
		1			43.09	269.44		2597		
	1		0.62	17.5	1.66	10.37		100		
Bacon, smoked, E. P.				1	0.105	0.648		6.25		
			1		2.98	18.37		177.2		
		1			48.63	412.08		2836		
	1		0.56	16	1.68	10.37		100		
Bananas, A. P.				1	0.008	0.004	0.143	0.64		
			1		0.23	0.11	4.05	18.1		
		1			3.62	1.81	64.80	290		
	1		5.51	156.2	1.24	0.62	22.32	100		

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Bananas				1	0.013	0.006	0.220	0.99		
E. P.			1		0.37	0.17	6.24	27.9		
		1			5.90	2.72	99.79	447		
	1		3.58	101.4	1.32	0.61	22.31	100		
Barley,				1	0.085	0.011	0.778	3.55		
pearled.			1		2.41	0.31	22.06	100.6		
		1			38.55	4.78	352.90	1610		
	1		0.99	28.2	2.38	0.31	21.78	100		
Beans,				1	0.225	0.018	0.596	3.45		
dried,			1		6.37	0.51	16.89	97.7		
A. P.		1			102.06	8.16	270.34	1564		
	1		1.02	29.0	6.53	0.52	17.30	100	.006+	2 tbls
				232					.25	1 c
				4.4					.10	1 lb.
Beans,				1	0.040	0.003	0.146	0.77		
Lima,			1		1.112	0.09	4.14	21.9		
canned.		1			18.14	1.36	66.21	350		
	1		4.58	129.7	5.19	0.39	18.94	100		
Beans,				1	0.181	0.015	0.659	3.50		
Lima,			1		5.13	0.43	18.68	99.1		
dried.		1			82.10	6.80	298.92	1586		
	1		1.01	28.6	5.17	0.43	18.85	100		

TABLE XIII.

Food Values of Food Materials Requiring Study of Weights and Measures, and of Comparative Cost on the Basis of Fuel Value.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Beans,				1	0.032	0.003	0.099	0.55		
Lima,			1		0.91	0.09	2.81	15.6		
fresh,		1			14.52	1.36	44.91	250		
A. P.	1		6.40	181.5	5.81	0.54	17.96	100		
Beans,				1	0.071	0.007	0.220	1.23		
Lima,			1		2.02	0.20	6.24	34.8		
fresh,		1			32.21	3.17	99.79	557		
E. P.	1		2.88	81.5	5.79	0.57	17.93	100		
Beans,				1	0.021	0.003	0.069	0.39		
string,			1		0.59	0.09	1.96	11.0		
fresh,		1			9.52	1.36	31.30	176		
A. P.	1		9.11	258.4	5.43	0.78	17.83	100		
Beans,				1	0.023	0.003	0.074	0.42		
string,			1		0.65	0.09	2.10	11.8		
fresh,		1			10.40	1.36	33.60	189		
E. P.	1		8.50	241.0	5.54	0.72	17.83	100		
Beef, dried,				1	0.264	0.069		1.68		
salted,			1		7.48	1.96		47.5		
smoked,		1			119.75	31.30		760		
A. P.	1		2.11	59.7	15.74	4.11		100		

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Beef, dried,				1	0.300	0.065	0.004	1.80		
salted,			1		8.50	1.84	0.11	51.1		
smoked,		1			136.08	29.48	1.81	817		
E. P.	1		1.96	55.5	16.66	3.61	0.22	100		
Beef,				1	0.236	0.277		3.44		
roast,			1		6.69	7.85		97.4		
A. P.		1			107.05	125.64		1559		
	1		1.03	29.1	6.87	8.06		100		
Beef suet,				1	0.047	0.818		7.55		
A. P.			1		1.33	23.19		214.0		
		1			21.32	371.04		3425		
	1		0.47	13.2	0.62	10.83		100		
Beets,				1	0.013	0.001	0.077	0.37		
fresh,			1		0.37	0.03	2.18	10.6		
A. P.		1			5.90	0.45	34.93	167		
	1		9.56	271.0	3.52	0.27	20.87	100		
Beets,				1	0.016	0.001	0.097	0.46		
fresh,			1		0.45	0.03	2.75	13.1		
E. P.		1			7.26	0.45	44.00	209		
	1		7.66	217.1	3.47	0.22	21.10	100		

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Black-				1	0.013	0.010	0.109	0.58		
berries,			1		0.37	0.28	3.09	16.4		
fresh,		1			5.89	4.54	49.44	262		
A. P.	1		6.10	173.0	2.25	1.73	18.85	100		
Bread,				1	0.093	0.012	0.527	2.59		
white,			1		2.63	0.34	14.94	73.4		
miscel-		1			42.18	5.44	239.05	1174		
laneous.	1		1.38	39.0	3.60	0.46	20.39	100		
Butter.				1	0.010	0.850		7.69		
			1		0.28	24.09		217.9		
		1			4.54	385.56		3488		
	1		0.46	13.0	0.13	11.05		100	.015	1 tbls.
				226					.24	1 c.
				450					.45	1 lb
Cabbage,				1	0.014	0.002	0.048	0.27		
A. P.			1		0.40	0.06	1.36	7.5		
		1			6.35	0.91	21.77	120.6		
	1		13.26	376.0	5.26	0.75	18.05	100		
Cabbage,				1	0.016	0.003	0.056	0.32		
E. P.			1		0.45	0.09	1.59	8.9		
		1			7.25	1.36	25.40	143		
	1		11.20	317.5	5.08	0.95	17.78	100		

TABLE XIII.

Food Values of Food Materials Requiring Study of Weights and Measures, and of Comparative Cost on the Basis of Fuel Value.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Carrots,				1	0.009	0.002	0.074	0.35		
A. P.			1		0.25	0.06	2.10	9.9		
		1			4.08	0.91	33.56	159		
	1		10.08	285.7	2.57	0.57	21.14	100		
Carrots,				1	0.011	0.004	0.093	0.45		
E. P.			1		0.31	0.11	2.64	12.8		
		1			4.99	1.81	42.18	205		
	1		7.80	221.2	2.43	0.88	20.55	100		
Cauli-				1	0.018	0.005	0.047	0.31		
flower,			1		0.51	0.14	1.33	8.7		
A. P.		1			8.16	2.27	21.32	138		
	1		11.57	327.9	5.91	1.64	15.41	100		
Celery,				1	0.009	0.001	0.026	0.15		
A. P.			1		0.26	0.03	0.74	4.2		
		1			4.08	0.45	11.79	68		
	1		23.67	671.1	6.04	0.67	17.45	100		
Celery,				1	0.011	0.001	0.033	0.19		
E. P.			1		0.31	0.03	0.93	5.2		
		1			4.98	0.45	14.97	84		
	1		19.07	540.6	5.94	0.54	17.84	100		

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Cheese,				1	0.288	0.359	0.003	4.40		
American			1		8.16	10.18	0.09	124.6		
pale,		1			130.64	162.84	1.35	1994		
A. P.	1		0.80	22.8	6.50	8.17	0.07	100		
Cheese,				1	0.187	0.274	0.015	3.27		
Neufchatel,			1		5.30	7.78	0.42	92.8		
		1			84.82	124.30	6.80	1485		
A. P.	1		1.08	30.5	5.71	8.47	0.46	100		
Cherries,				1	0.009	0.008	0.159	0.74		
fresh,			1		0.25	0.23	4.51	21.1		
A. P.		1			4.08	3.63	72.12	338		
	1		4.74	134.4	1.21	1.08	21.37	100		
Cherries,				1	0.01	0.008	0.167	0.78		
fresh,			1		0.28	0.23	4.73	22.1		
E. P.		1			4.54	3.63	75.75	354		
	1		4.52	128.2	1.28	1.03	21.41	100		
Chocolate.				1	0.129	0.487	0.303	6.11		
			1		3.65	13.80	8.59	173.3		
		1			58.51	220.90	137.40	2772		
	1		0.58	16.4 262.4	2.11	7.97	4.95	100	.365 o .25	4 oz. 1 [illegible]

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Cocoa.				1	0.216	0.289	0.377	4.97		
			1		6.12	8.19	10.69	141.0		
		1			97.98	131.10	171.00	2256		
	1		0.71	20.1	4.34	5.81	7.58	100	.0321	3 tbsp
				107.2					.1721	1 c.
				144.3					.30	24 tbsp
Cod, salt, boneless, A. P.				1	0.277	0.003		1.14		
			1		7.85	0.09		32.2		
		1			125.65	1.36		515		
	1		3.10	88.0	24.40	0.26		100		
Corn, canned.				1	0.028	0.012	0.190	0.98		
			1		0.79	0.34	5.39	27.8		
		1			12.70	5.44	86.19	445		
	1		3.60	102.0	2.86	1.23	19.39	100		
Corn, green, A. P.				1	0.012	0.004	0.077	0.39		
			1		0.34	0.11	2.18	11.1		
		1			5.44	1.81	34.93	178		
	1		9.00	255.1	3.06	1.02	19.64	100		
Corn, green, E. P.				1	0.031	0.011	0.197	1.01		
			1		0.88	0.31	5.58	28.7		
		1			14.06	4.98	89.36	459		
	1		3.49	99.0	3.06	1.09	19.49	100		

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Corn-				1	0.092	0.019	0.754	3.56		
meal,			1		2.61	0.54	21.38	100.8		
granular.		1			41.73	8.62	342.01	1613		
	1		0.99	28.1	2.59	0.53	21.20	100	.007	3 tbls
				141.5					.0376	1 c.
				517.44					.15	4 c.
Corn-				1	0.055	0.015	0.810	3.60		
flakes,			1		1.56	0.43	23.00	102.1		
toasted.*		1			24.95	6.80	367.40	1631		
	1		0.99	27.8	1.53	0.42	22.53	100	.0132	17 tbls
				26.08					.0125	1 c.
				312.96					.15	12 cups (1 pk)
Corn-				1			0.900	3.60		
starch.			1				25.52	102.0		
		1					408.24	1632		
	1		0.99	27.8			25.0	100	.011	3.25 tbs.
				131.					.055	1 c.
				408					.15	1 lb. (1 pk)
Crackers,				1	0.100	0.094	0.738	4.20		
graham.			1		2.84	2.66	20.92	119.0		
		1			45.36	42.64	334.76	1904		
	1		0.84	23.8	2.38	2.24	17.58	100		
Crackers,				1	0.113	0.105	0.705	4.22		
oyster.			1		3.20	2.98	19.98	119.6		
		1			51.26	47.63	320.10	1914		
	1		0.84	23.7	2.68	2.49	16.72	100		

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* Ont. Dept. of Agr., Bull. 162.

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Crackers, soda.				1	0.098	0.091	0.731	4.14		
			1		2.78	2.58	20.74	117.2		
		1			44.45	41.27	331.64	1875		
	1		0.85	24.2	2.37	2.20	17.68	100		
Cranberries, A. P.				1	0.004	0.006	0.099	0.47		
			1		0.11	0.17	2.81	13.2		
		1			1.81	2.72	44.91	211		
	1		7.57	214.6	0.86	1.29	21.25	100		
Cream, thick, (40 %).				1	0.022	0.400	0.030	3.81		
			1		0.62	11.34	0.85	107.9		
		1			9.98	181.44	13.67	1727		
	1		0.93	26.3	0.58	10.47	0.78	100		
Cucumbers, A. P.				1	0.007	0.002	0.026	0.15		
			1		0.20	0.06	0.74	4.3		
		1			3.17	0.91	11.79	68		
	1		23.53	666.7	4.67	1.33	17.33	100		
Cucumbers, E. P.				1	0.008	0.002	0.031	0.17		
			1		0.23	0.06	0.88	4.9		
		1			3.63	0.91	14.06	79.0		
	1		20.28	574.8	4.60	1.15	17.82	100		

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Currants,				1	0.024	0.017	0.742	3.22		
dried,			1		0.68	0.48	21.04	91.2		
(Zante),		1			10.89	7.71	336.58	1459		
A. P.	1		1.10	31.1	0.75	0.53	23.07	100		
Currants,				1	0.015		0.128	0.57		
fresh,			1		0.48		3.62	16.2		
A. P.		1			6.80		58.04	259		
	1		6.17	174.8	2.62		22.38	100		
Dates,				1	0.019	0.025	0.706	3.13		
dried,			1		0.54	0.71	20.01	88.6		
A. P.		1			8.62	11.34	320.20	1416		
	1		1.13	32.0	0.60	0.80	22.59	100		
Dates,				1	0.021	0.028	0.784	3.47		
dried,			1		0.60	0.79	22.23	98.4		
E. P.		1			9.53	12.70	355.60	1575		
	1		1.02	28.8	0.61	0.81	22.58	100		
Eggs,				1	0.119	0.093		1.31		
whole,			1		3.37	2.63		37.2		
A. P.		1			53.98	42.18		595		
	1		2.69	76.2	9.06	7.08		100		

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Eggs,				1	0.134	0.105		1.48		
whole,			1		3.79	2.98		42.0		
E. P.		1			60.78	47.63		672		
	1		2.38	67.5	9.05	7.09		100		
Egg,				1	0.123	0.002		0.51		
white,			1		3.48	0.06		14.4		
E. P.		1			55.79	0.91		231		
	1		6.92	196.1	24.12	0.39		100		
Egg, yolk,				1	0.157	0.333		3.63		
E. P.			1		4.45	9.44		102.7		
		1			71.22	151.05		1643		
	1		0.97	27.6	4.33	9.18		100		
Farina.				1	0.110	0.014	0.763	3.62		
			1		3.12	0.39	21.64	102.6		
		1			49.89	6.35	346.10	1641		
	1		0.97	27.6	3.04	0.39	21.09	100		
Figs, dried.				1	0.043	0.003	0.742	3.17		
			1		1.21	0.09	21.00	89.8		
		1			19.50	1.36	336.50	1437		
	1		1.12	31.6	1.36	0.09	23.44	100		

TABLE XIII.

Food Values of Food Materials Requiring Study of Weights and Measures, and of Comparative Cost on the Basis of Fuel Value.—*Continued.*

Material Food	S. P.	Weight			Protein, Grams	Fat, Grams	Carbo-hydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Force.*				1	0.100	0.015	0.750	3.54		
			1		2.86	0.43	21.27	100.4		
		1			45.76	6.85	340.30	1605		
	1		1.0	28.3	2.82	0.42	21.19	100		
Gelatin.				1	0.914	0.001		3.67		
			1		25.91	0.03		103.9		
		1			414.59	0.45		1662		
	1		0.96	27.3	24.95	0.03		100		
Graham flour.				1	0.133	0.022	0.714	3.59		
			1		3.77	0.63	20.24	101.7		
		1			60.32	9.98	323.87	1627		
	1		0.98	27.9	3.71	0.61	19.92	100		
Grapes, fresh, A. P.				1	0.010	0.012	0.144	0.72		
			1		0.28	0.34	4.08	20.5		
		1			4.54	5.44	65.32	328		
	1		4.87	138.1	1.38	1.66	19.89	100		
Grapes, fresh, E. P.				1	0.013	0.016	0.192	0.96		
			1		0.37	0.45	5.44	27.3		
		1			5.90	7.26	87.09	437		
	1		3.66	103.7	1.36	1.66	19.92	100		

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* Ont. Dept. of Agr., Bull. 162.

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Grape-				1	0.115	0.010	0.790	3.71		
nuts.*			1		3.26	0.28	22.39	105.2		
		1			52.16	4.54	358.34	1683		
	1		0.95	27.0	3.11	0.27	21.33	100	00936	3 tbsp
				144					05	1 c
				432					.15	3 c
Ham,				1	0.202	0.224		2.82		
smoked,			1		5.73	6.35		80.1		
boiled,		1			91.62	101.61		1281		
A. P.	1		1.25	35.4	7.15	7.93		100		
Hominy.				1	0.083	0.006	0.790	3.55		
			1		2.36	0.17	22.39	100.5		
		1			37.65	2.72	358.34	1608		
	1		1.0	28.3	2.35	0.17	22.32	100		
Lady				1	0.088	0.050	0.706	3.63		
fingers,			1		2.49	1.41	20.01	102.7		
A. P.		1			39.84	22.56	320.20	1643		
	1		0.97	27.6	2.43	1.40	19.47	100		
Lamb				1	0.184	0.267		3.14		
chops,			1		5.22	7.57		89.0		
broiled,		1			83.46	121.10		1425		
A. P.	1		1.13	31.9	5.86	8.51		100		

* Ont. Dept. of Agr., Bull. 162.

TABLE XIII.

Food Values of Food Materials Requiring Study of Weights and Measures, and of Comparative Cost on the Basis of Fuel Value.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Lamb				1	0.217	0.299		3.56		
chops,			1		6.15	8.48		100.9		
broiled,		1			98.43	135.63		1615		
E. P.	1		0.99	28.1	6.10	8.40		100		
Lard,				1		1.000		9.00		
A. P.			1			28.35		255.2		
		1				453.60		4082		
	1		0.39	11.1		11.11		100		
Lemon				1			0.098	0.39		
juice.			1				2.77	11.1		
		1					44.45	178		
	1		9.0	255.1			25.00	100		
Lentils,				1	0.257	0.010	0.592	3.49		
dried,			1		7.29	0.28	16.78	98.8		
A. P.		1			116.57	4.54	268.52	1581		
	1		1.01	28.7	7.37	0.29	16.98	100		
Lettuce,				1	0.010	0.002	0.025	0.16		
A. P.			1		0.28	0.06	0.70	4.5		
		1			4.54	0.91	11.30	72		
	1		22.32	632.9	6.33	1.27	15.82	100		

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Lettuce, E. P.				1	0.012	0.003	0.029	0.19		
			1		0.34	0.09	0.82	5.4		
		1			5.44	1.36	13.15	87		
	1		18.47	523.6	6.28	1.57	15.18	100		
Macaroni.				1	0.134	0.009	0.741	3.58		
			1		3.80	0.25	21.00	101.5		
		1			60.78	4.08	336.12	1624		
	1		0.99	28.0	3.70	0.25	20.70	100	.005	4 tbls
				112					.0225	1 c
				507					.10	4 1/2 c.
Milk, condensed, sweetened.				1	0.088	0.083	0.541	3.26		
			1		2.49	2.35	15.34	92.5		
		1			39.95	37.65	245.40	1480		
	1		1.08	30.6	2.70	2.54	16.58	100		
Milk, condensed, unsweetened.				1	0.096	0.093	0.112	1.67		
			1		2.72	2.63	3.17	47.3		
		1			43.55	42.18	50.85	757		
	1		2.11	59.9	5.75	5.57	6.71	100		
Milk, skimmed.				1	0.034	0.003	0.051	0.37		
			1		0.96	0.09	1.45	10.4		
		1			15.40	1.36	23.10	166		
	1		9.61	272.5	9.26	0.82	13.90	100		

TABLE XIII.

Food Values of Food Materials Requiring Study of Weights and Measures, and of Comparative Cost on the Basis of Fuel Value.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz	gms.						
Milk,				1	0.033	0.040	0.050	0.69		
whole.			1		0.94	1.13	1.41	19.6		
		1			14.96	18.14	22.68	314		
	1		5.10	144.5	4.76	5.78	7.22	100	.0164	2/3
				216.15					.025	1 c
				867					.10	4
Molasses,				1	0.024		0.693	2.87		
cane,			1		0.68		19.65	81.3		
		1			10.88		314.40	1301		
	1		1.23	34.9	0.84		24.16	100	.0093	2 tbs.
				279.2					.075	1 c.
				558.4					.115	2 c.
Musk-melons, A. P.				1	0.003		0.046	0.20		
			1		0.09		1.30	5.6		
		1			1.36		20.86	88.9		
	1		18.00	510.2	1.53		23.47	100		
Musk-melons, E. P.				1	0.006		0.093	0.40		
			1		0.17		2.64	11.2		
		1			2.72		42.18	180		
	1		8.91	252.5	1.52		23.48	100		
Oats,				1	0.167	0.073	0.662	3.97		
rolled.			1		4.73	2.07	18.77	112.6		
		1			75.75	33.12	300.40	1803		
	1		0.89	25.2	4.20	1.83	16.67	100	.00585	3 tbs
				134.4					.03125	1 c
				1075.2					.25	8

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Olives,				1	0.008	0.202	0.085	2.19		
green,			1		0.23	5.72	2.41	62.1		
A. P.		1			3.63	91.60	38.55	993		
	1		1.61	45.7	0.36	9.22	3.88	100		
Olives,				1	0.011	0.276	0.116	2.99		
green,			1		0.31	7.82	3.29	84.8		
E. P.		1			4.99	125.18	52.61	1357		
	1		1.18	33.4	0.37	9.23	3.88	100		
Olive oil.				1		1.000		9.00		
			1			28.35		255.1		
		1				453.60		4082		
	1		0.39	11.1		11.11		100		
Onions,				1	0.014	0.003	0.089	0.44		
fresh,			1		0.40	0.09	2.52	12.4		
A. P.		1			6.35	1.36	40.37	199		
	1		8.03	227.6	3.19	0.68	20.27	100		
Onions,				1	0.016	0.003	0.099	0.49		
fresh,			1		0.45	0.09	2.80	13.8		
E. P.		1			7.26	1.36	44.80	220		
	1		7.24	205.4	3.30	0.62	20.33	100		

TABLE XIII.

Food Values of Food Materials Requiring Study of Weights and Measures, and of Comparative Cost on the Basis of Fuel Value.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Oranges, fresh, A. P.				1	0.006	0.001	0.085	0.37		
			1		0.17	0.03	2.41	10.6		
		1			2.72	0.45	38.56	169		
	1		9.45	268.1	1.61	0.27	22.79	100		
Oranges, fresh, E. P.				1	0.008	0.002	0.116	0.51		
			1		0.23	0.06	3.29	14.6		
		1			3.63	0.91	52.61	233		
	1		6.86	194.6	1.56	0.39	22.57	100		
Oysters, solids, A. P.				1	0.060	0.013	0.033	0.49		
			1		1.70	0.37	0.94	13.9		
		1			27.22	5.90	14.97	222		
	1		7.21	204.5	12.27	2.66	6.75	100		
Oysters, in shell, E. P.				1	0.062	0.012	0.037	0.50		
			1		1.75	0.34	1.05	14.3		
		1			28.14	5.44	16.30	229		
	1		7.00	198.4	12.30	2.38	7.34	100		
Parsnips, A. P.				1	0.013	0.004	0.108	0.52		
			1		0.37	0.11	3.06	14.7		
		1			5.90	1.81	48.96	236		
	1		6.78	192.3	2.50	0.77	20.77	100		

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Parsnips,				1	0.016	0.005	0.135	0.65		
E. P.			1		0.45	0.14	3.83	18.4		
		1			7.30	2.27	61.24	294		
	1		5.43	154.1	2.47	0.77	20.80	100		
Peaches,				1	0.007	0.001	0.108	0.47		
canned,			1		0.20	0.03	3.06	13.3		
A. P.		1			3.17	0.45	48.99	213		
	1		7.50	213.2	1.49	0.21	23.03	100		
Peaches,				1	0.005	0.001	0.077	0.34		
fresh,			1		0.14	0.03	2.18	9.6		
A. P.		1			2.27	0.45	34.92	153		
	1		10.47	296.7	1.48	0.30	22.85	100		
Peaches,				1	0.007	0.001	0.094	0.41		
fresh,			1		0.20	0.03	2.67	11.7		
E. P.		1			3.17	0.45	42.64	187		
	1		8.53	242.1	1.70	0.24	22.76	100		
Peanuts,				1	0.195	0.291	0.185	4.14		
A. P.			1		5.52	8.25	5.24	117.3		
		1			88.36	131.87	83.82	1877		
	1		0.85	24.2	4.71	7.03	4.47	100		

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Peanuts,				1	0.258	0.386	0.244	5.48		
E. P.			1		7.31	10.94	6.91	155.4		
		1			117.03	175.09	110.70	2487		
	1		0.64	18.2	4.69	7.03	4.44	100		
Peanut				1	0.293	0.465	0.171	6.04		
butter.			1		8.31	13.20	4.85	171.3		
		1			132.90	210.90	77.56	2741		
	1		0.58	16.5	4.85	7.70	2.83	100		
Pears,				1	0.003	0.003	0.180	0.76		
canned,			1		0.09	0.09	5.10	21.5		
A. P.		1			1.36	1.36	81.64	344		
	1		4.65	131.7	0.39	0.39	23.72	100		
Pears,				1	0.005	0.004	0.127	0.56		
fresh,			1		0.14	0.11	3.60	16.0		
A. P.		1			2.27	1.81	57.61	256		
	1		6.25	177.3	0.86	0.71	22.52	100		
Pears,				1	0.006	0.005	0.141	0.63		
fresh,			1		0.17	0.14	4.00	17.9		
E. P.		1			2.72	2.27	63.96	287		
	1		5.57	158.0	0.95	0.79	22.28	100		

TABLE XIII.

Food Values of Food Materials Requiring Study of Weights and Measures, and of Comparative Cost on the Basis of Fuel Value.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Peas,				1	0.036	0.002	0.098	0.55		
canned.			1		1.02	0.06	2.78	15.7		
		1			16.32	0.91	44.45	251		
	1		6.37	180.5	6.52	0.36	17.73	100		
Peas,				1	0.246	0.010	0.620	3.55		
dried,			1		6.97	0.28	17.57	100.7		
split,		1			111.6	4.54	281.40	1612		
A. P.	1		0.99	28.1	6.92	0.28	17.40	100	.02	2 tbls
				224.5					.05	1 c
				454					.15	1 lb.
Peas,				1	0.036	0.002	0.098	0.55		
green,			1		1.02	0.06	2.78	15.7		
A. P.		1			16.33	0.91	44.45	251		
	1		6.37	180.5	6.50	0.36	17.69	100		
Peas,				1	0.070	0.005	0.169	1.00		
green,			1		1.98	0.14	4.79	28.3		
E. P.		1			31.70	2.27	76.66	454		
	1		3.52	99.9	6.99	0.50	16.88	100		
Pineapple,				1	0.004	0.007	0.364	1.53		
canned,			1		0.11	0.20	10.32	43.5		
A. P.		1			1.81	3.18	165.10	696		
	1		2.30	65.1	0.26	0.45	23.71	100		

TABLE XIII.

Food Values of Food Materials Requiring Study of Weights and Measures, and of Comparative Cost on the Basis of Fuel Value.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Pineapple,				1	0.004	0.003	0.097	0.43		
fresh,			1		0.11	0.09	2.75	12.2		
E. P.		1			1.81	1.36	44.04	196		
	1		8.18	232.0	0.93	0.70	22.5	100		
Plums,				1	0.009		0.191	0.80		
fresh,			1		0.25		5.42	22.7		
A. P.		1			4.08		86.64	363		
	1		4.41	125.0	1.13		23.87	100		
Plums,				1	0.010		0.201	0.84		
fresh,			1		0.28		5.70	23.9		
E. P.		1			4.54		91.16	383		
	1		4.18	118.5	1.19		23.81	100		
Potatoes,				1	0.018	0.001	0.147	0.67		
raw,			1		0.51	0.03	4.17	19.0		
A. P.		1			8.16	0.45	66.68	304		
	1		5.27	149.5	2.69	0.15	21.97	100		
Potatoes,				1	0.022	0.001	0.184	0.83		
raw,			1		0.62	0.03	5.22	23.6		
E. P.		1			9.93	0.45	83.46	378		
	1		4.23	120.0	2.64	0.12	22.09	100		

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Potatoes,				1	0.068	0.398	0.467	5.72		
cooked,			1		1.93	11.28	13.25	162.2		
chips,		1			30.85	180.50	211.80	2596		
A. P.	1		0.62	17.5	1.19	6.96	8.16	100		
Potatoes,				1	0.014	0.006	0.219	0.99		
sweet,			1		0.39	0.17	6.21	27.9		
A. P.		1			6.35	2.72	99.24	447		
	1		3.58	101.4	1.42	0.60	22.20	100		
Potatoes,				1	0.018	0.007	0.274	1.23		
sweet,			1		0.51	0.20	7.77	34.9		
E. P.		1			8.16	3.18	124.29	558		
	1		2.86	81.2	1.46	0.57	22.26	100		
Prunes,				1	0.018		0.622	2.56		
A. P.			1		0.51		17.63	72.6		
		1			8.16		282.10	1161		
	1		1.37	39.1	0.70		24.30	100		
Prunes,				1	0.021		0.733	3.02		
E. P.			1		0.60		20.78	85.5		
		1			9.53		332.48	1368		
	1		1.17	33.2	0.70		24.30	100		

TABLE XIII.

Food Values of Food Materials Requiring Study of Weights and Measures, and of Comparative Cost on the Basis of Fuel Value.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Radishes, A. P.				1	0.009	0.001	0.040	0.21		
			1		0.26	0.03	1.13	5.8		
		1			4.08	0.45	18.14	93		
	1		17.21	487.8	4.39	0.49	19.51	100		
Radishes, E. P.				1	0.013	0.001	0.058	0.29		
			1		0.37	0.03	1.64	8.3		
		1			5.90	0.45	26.31	133		
	1		12.04	341.3	4.43	0.34	19.79	100		
Raisins, A. P.				1	0.023	0.030	0.685	3.10		
			1		0.65	0.85	19.42	87.9		
		1			10.43	13.61	310.70	1407		
	1		1.14	32.2	0.74	0.97	22.08	100		
Raisins, E. P.				1	0.026	0.033	0.761	3.45		
			1		0.74	0.94	21.57	97.7		
		1			11.79	14.97	345.19	1563		
	1		1.02	29.0	0.76	0.96	22.09	100		
Raspberries, black, fresh, E. P.				1	0.017	0.010	0.126	0.66		
			1		0.48	0.28	3.57	18.8		
		1			7.71	4.54	57.16	300		
	1		5.33	151.1	2.57	1.51	19.08	100		

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Rhubarb,				1	0.004	0.004	0.022	0.14		
fresh,			1		0.11	0.11	0.62	3.9		
A. P.		1			1.81	1.81	9.98	62		
	1		25.20	714.2	2.86	2.86	15.71	100		
Rhubarb,				1	0.006	0.007	0.036	0.23		
fresh,			1		0.17	0.20	1.02	6.6		
E. P.		1			2.72	3.17	16.33	105		
	1		15.27	433.0	2.60	3.03	15.58	100		
Rice.				1	0.08	0.003	0.790	3.51		
			1		2.26	0.09	22.39	99.4		
		1			36.32	1.36	358.34	1591		
	1		1.01	28.5	2.28	0.09	22.52	100		
Salmon,				1	0.195	0.075		1.45		
canned,			1		5.53	2.13		41.2		
A. P.		1			88.45	34.02		660		
	1		2.41	68.7	13.40	5.15		100		
Salmon,				1	0.218	0.121		1.96		
canned,			1		6.18	3.43		55.6		
E. P.		1			98.87	54.88		889		
	1		1.80	51.0	11.12	6.17		100		

TABLE XIII.

Food Values of Food Materials Requiring Study of Weights and Measures, and of Comparative Cost on the Basis of Fuel Value.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Saltines.				1	0.106	0.127	0.685	4.31		
			1		3.00	3.60	19.42	122.1		
		1			48.08	57.60	310.70	1954		
	1		0.82	23.2	2.46	2.95	15.90	100	.0168	7
				271.44					.20	82
Sardines,				1	0.237	0.121		2.04		
canned,			1		6.72	3.43		57.7		
A. P.		1			107.50	54.89		924		
	1		1.73	49.1	11.64	5.94		100	.064	4 Sardin
				109.98					.15	9 " (1cc
Sardines,				1	0.230	0.197		2.69		
canned,			1		6.52	5.58		76.3		
E. P.		1			104.32	89.28		1221		
	1		1.31	37.1	8.54	7.32		100		
Spinach,				1	0.021	0.003	0.032	0.24		
fresh,			1		0.59	0.09	0.91	6.8		
E. P.		1			9.52	1.36	14.50	108		
	1		14.76	418.4	8.79	1.25	13.39	100		
Squash,				1	0.007	0.002	0.045	0.23		
fresh,			1		0.20	0.06	1.28	6.4		
A. P.		1			3.17	0.91	20.41	103		
	1		15.62	443	3.10	0.88	19.91	100		

TABLE XIII.

Food Values of Food Materials Requiring Study of Weights and Measures, and of Comparative Cost on the Basis of Fuel Value.—*Continued.*

Food Material	S. P.	Weight lb.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
Strawberries, fresh, A. P.				1	0.009	0.006	0.070	0.37		
			1		0.26	0.17	1.98	10.5		
		1			4.08	2.72	31.75	168		
	1		9.53	270.3	2.43	1.62	18.90	100		
Strawberries, fresh, E. P.				1	0.010	0.006	0.074	0.39		
			1		0.28	0.17	2.10	11.1		
		1			4.54	2.72	33.57	177		
	1		9.04	256.4	2.56	1.54	18.97	100		
Sugar, granulated.				1			1.00	4.00		
			1				28.35	113.4		
		1					453.60	1814		
	1		0.88	25.0			25.00	100	.0075	2 tbs.
				200					.06	1c
				400					.12	1 lb.
Tapioca.				1	0.004	0.001	0.880	3.55		
			1		0.11	0.03	24.95	100.5		
		1			1.81	0.45	399.20	1608		
	1		0.99	28.2	0.11	0.03	24.83	100	.0156	2½ tbs.
				162.4					.0995	1 c
				317.3					.16	1 pt.
Tomatoes, canned.				1	0.012	0.002	0.04	0.23		
			1		0.34	0.06	1.13	6.4		
		1			5.44	0.91	18.10	103		
	1		15.63	442.5	5.31	0.88	17.70	100		

TABLE XIII.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Tomatoes, fresh, A. P.				1	0.009	0.004	0.039	0.23		
			1		0.26	0.11	1.10	6.5		
		1			4.08	1.81	17.69	103		
	1		15.47	438.6	3.95	1.75	17.11	100		
Turnips, fresh, A. P.				1	0.009	0.001	0.057	0.27		
			1		0.26	0.03	1.62	7.7		
		1			4.08	0.45	25.85	124		
	1		12.92	366.3	3.30	0.37	20.88	100		
Turnips, fresh, E. P.				1	0.013	0.002	0.081	0.39		
			1		0.37	0.06	2.30	11.2		
		1			5.89	0.91	36.74	179		
	1		8.95	253.8	3.30	0.51	20.56	100		
Walnuts, California, A. P.				1	0.049	0.173	0.035	1.89		
			1		1.39	4.94	0.99	53.6		
		1			22.21	78.40	15.87	859		
	1		1.86	52.8	2.59	9.14	1.85	100		
Walnuts, California, E. P.				1	0.184	0.644	0.130	7.03		
			1		5.22	18.26	3.69	200.0		
		1			83.46	292.10	58.97	3199		
	1		0.50	14.2	2.61	9.13	1.84	100		

TABLE XIII.

Food Values of Food Materials Requiring Study of Weights and Measures, and of Comparative Cost on the Basis of Fuel Value.—*Continued.*

Food Material	S. P.	Weight lb.	oz.	gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
Wheat,				1	0.134	0.014	0.743	3.63		
flaked,			1		3.80	0.39	21.06	103.0		
		1			60.78	6.35	337.00	1648		
	1		0.97	27.5	3.70	0.38	20.50	100	.01470	3½ tbls.
				17.0					.0304	1 c
				85.5					.145	4 7/8 c
Wheat,				1	0.138	0.019	0.719	3.60		
flour,			1		3.91	0.53	20.38	102.0		
entire.		1			62.60	8.69	326.14	1633		
	1		0.98	27.8	3.84	0.53	19.98	100		
Wheat,				1	0.112	0.010	0.749	3.53		
flour, high			1		3.18	0.28	21.24	100.2		
grade, roller		1			50.80	4.53	339.75	1603		
process.	1		1.0	28.3	3.17	0.28	21.19	100	.0025	4 tbls
				113.2					.01	1 c
				452.8					.04	1 lb.
Wheat,				1	0.121	0.018	0.752	3.65		
shredded.			1		3.43	0.51	21.31	103.6		
		1			54.88	8.16	341.10	1657		
	1		0.97	27.4	3.51	0.49	20.59	100		
Zwiebach.				1	0.098	0.099	0.735	4.22		
			1		2.77	2.80	20.83	119.6		
		1			44.45	44.90	333.40	1916		
	1		0.84	23.7	2.32	2.35	17.41	100		

PROBLEM II.

GIVEN THE PERCENTAGE COMPOSITION, TO FIND THE WEIGHT OF PROTEIN, FAT, AND CARBOHYDRATE RESPECTIVELY, IN ANY WEIGHT OF FOOD MATERIAL.

In studying food values, it is necessary to be able to translate percentage quickly into terms of weight and vice versa. This is simple if it be clearly understood at the outset that percentage means *parts per 100 parts,* without regard to whether these parts be taken by English or Metric system. Cows' milk has the following percentage composition:

Protein	Fat	Carbohydrate
3.3 per cent	4.0 per cent	5.0 per cent

If we take as the basis for calculation a unit of weight, as one pound, we shall find the following weight of protein, fat and carbohydrate yielded by this amount of milk:

Protein	Fat	Carbohydrate
0.033 pound	0.04 pound	0.05 pound

The scientific unit of weight is the gram, and the food-stuffs are commonly reported in terms of this unit. In one gram of milk there will be by weight, according to the above analysis:

Protein	Fat	Carbohydrate
0.033 gram	0.04 gram	0.05 gram

In other words, dividing the figures representing the percentage composition by 100 (*i. e.*, moving the decimal point two places toward the left) will give the weight in grams of protein, fat and carbohydrate in one *gram* of any food material.

The number of grams of protein, fat or carbohydrate in one *ounce* of any food material may be found most easily by multiplying the values for one gram by 28.35, the number of grams in one ounce. Thus one ounce of milk yields:

Protein	Fat	Carbohydrate
0.9355 gram (0.033 × 28.35)	1.134 grams (0.04 × 28.35)	1.4175 grams (0.05 × 28.35)

The number of grams of protein, fat, or carbohydrate in one *pound* will be found by multiplying the values for one gram by

453.6, the number of grams in one pound. Thus one pound of milk yields:

Protein	Fat	Carbohydrate
14.9688 grams	18.144 grams	22.68 grams
(0.033 × 453.6)	(0.04 × 453.6)	(0.05 × 453.6)

In general, to find the weights of foodstuffs in any given amount of food material, find the weight of the material, express this in grams, and multiply the result by the food values for one gram. For example, to find the weight of each of the foodstuffs in quart of milk.

First, ascertain the weight—34.4 ounces.

Second, express this weight in grams—34.4 × 28.35 = 975.24 grams.

Third, multiply the weight in grams by the food values for one gram, as follows:

Protein	975.24 × 0.033	= 32.183 grams.
Fat	975.24 × 0.04	= 39.0096 grams.
Carbohydrates	975.24 × 0.05	= 48.762 grams.

In actual practice it is not necessary to retain all of these figures in the decimal fractions, which imply greater accuracy than is possible in estimating food values from average analyses of the food materials, as already stated in Problem I. The discrepancies which occur from dropping decimals are within the limits of accuracy in this method of determining food values.

PROBLEM III.

TO FIND THE FUEL VALUE OF ANY GIVEN WEIGHT OF FOOD MATERIAL.

Since fuel values are expressed in terms of *Calories per gram*, one gram of protein yielding 4 Calories, one gram of fat 9 Calories, and one gram of carbohydrate 4 Calories, it is necessary to find first the amount of each nutrient in the given weight of food material in grams, and then to multiply these results by the respective factors for fuel values, the sum of the products being the total fuel value. For example, one gram of milk yields 0.033 gram of protein, 0.04 gram of fat and 0.05 gram of carbohydrate (cf. Problem II). Then

$0.033 \times 4 = 0.132$ Calories from protein
$0.04 \times 9 = 0.360$ Calories from fat
$0.05 \times 4 = 0.200$ Calories from carbohydrate
Total, 0.692 Calories, fuel value of one gram of milk.

Similarly, the total fuel value for one quart of milk is obtained as follows:

Weight of protein = 32.18 grams;[*] $32.18 \times 4 = 129.72$ Calories
Weight of fat = 39.01 grams;[*] $39.01 \times 9 = 351.09$ Calories
Weight of carbohydrate = 48.76 grams;[*] $48.76 \times 4 = 195.04$ Calories
Total fuel value of one quart of milk = 675.85 Calories

PROBLEM IV.

TO FIND THE WEIGHT OF A STANDARD OR 100-CALORIE PORTION OF ANY SINGLE FOOD MATERIAL.

In order to obtain an intelligent idea of the relative value of different kinds of food materials, it is necessary to establish some common unit on the basis of which they may be compared. With regard to fuel value, such a unit has been devised in the Standard Portion, which is the amount of any food capable of yielding in the body energy equivalent to 100 Calories. Every student of dietetics should be familiar with the Standard Portions of all common food materials, and of the dishes which most frequently appear upon the table.

To find the weight in grams of any Standard or 100-Calorie Portion:

Determine the fuel value for one gram.

Divide 100 by the fuel value per gram, or in other words, solve the following proportion:

1 gram : Calories in one gram : : x grams : 100 Calories.

Thus in the case of cows' milk, the fuel value per gram is 0.692 Calorie.[†]

Then $100 \div 0.692 = 144.5$ grams; or,

$$1 \text{ gram} : 0.692 \text{ Calorie} : : x : 100 \text{ Calories.}$$

$$0.692\,x = 100$$

$$x = 144.5 \text{ grams, weight of One Standard Portion of Milk.}$$

Inasmuch as foods are purchased by English measure, it is necessary in estimating cost to express the Standard Portion in ounces (or sometimes in pounds). This can be done by dividing the number of grams by 28.35 (the number of grams in one ounce), but much time can be saved by using Table XVI for converting grams to ounces. By reference to this table, we find that 144.5 grams = 5.1 ounces.

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[*] Cf. Problem II.

[†] Cf. Problem III, and Table XIII.

EXAMPLES FOR PRACTICE.

Find the weight in grams and ounces of a Standard or 100 Calorie Portion of each of the following food materials:*

	Protein, Per Cent	Fat, Per Cent	Carbohydrate Per Cent
Almond butter	21.66	61.50	11.59
Almond meal†	26.37	1.67	56.84
Angelica	0.05	0.07	87.34
Citron	0.09	0.07	77.62
Kidney beans, edible portion	41.06	1.62	42.14
Kidney beans, water free, edible portion	43.65	1.72	44.80
Loquat, edible portion‡	0.29	——	23.00
Malt breakfast food	11.80	0.46	75.32
Oyster plant (salsify), fresh, edible portion	4.26	0.33	6.85
Peppers, green, fresh, edible portion	1.60	0.15	4.54
Soy beans†	34.63	17.98	30.50
Soy bean meal§	39.87	19.06	25.09

PROBLEM V.

TO FIND THE FOOD VALUES FOR ANY COMBINATION OF FOOD MATERIALS.

In ordinary dietetic practice, it is necessary to deal frequently with combinations of two or more food materials. Sugar is added to fruit, milk and butter to vegetables, and the products of cook book recipes are often quite complex mixtures. To ascertain the food values of such dishes it is necessary to proceed as follows:

First, determine the weight of each ingredient in grams.

Second, compute separately the protein, fat and carbohydrate in grams, and the fuel value for each food material.

The sum of these will give the food values for the whole dish, as the following illustration will show:

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* From Maine Agric. Exper. Sta., Bull. 158, 1909, unless otherwise stated.

† Friedenwald and Ruhräh, Am. Jour. Med. Sc., vol. 140, p. 793, 1910.

‡ Ontario Dept. of Agric., Bull. 162, 1907.

§ Conn. Exper. Sta. Report, 1906.

ONE EGG CAKE.*

¼ cup of butter
½ cup of sugar
1 egg
½ cup of milk
1½ cups of flour
2½ teaspoons of baking powder

* Boston Cooking-School Cook Book.

The butter weighs 57 grams; calculating the nutritive value according to Problems II and III (or referring to the food values of one gram in Table XIII) we have the following results:

Protein, Grams	Fat, Grams	Carbohydrate, Grams	Calories
0.57	48.45	——	438.3

The other food materials are weighed and their food values calculated in similar fashion. The sum of the values for each food as tabulated below will give the value of the whole dish. The cost may be calculated for each ingredient and recorded at the same time.

FOOD VALUES OF A RECIPE.*

Material	Measure	Weight		Protein, Gm.	Fat, Gm.	Carb., Gm.	Calories.	Cost, Dollars
		Oz.	Gm.					
Butter	¼ c.†	2.0	57	0.57	48.45	——	438.3	0.0450
Sugar	½ c.	3.9	105	——	——	105.00	420.0	0.0137
Egg	1	2.0	57	6.78	5.30	——	74.8	0.0300
Milk (skimmed)	½ c.	4.3	122	4.15	0.36	6.22	44.7	0.0050
Flour	1½ c.	6.0	172	17.26	1.72	128.73	607.8	0.0132
Baking powder	2½ tsp.†	0.5	15	——	——	——	——	0.0156
Totals (uncooked)‡	3 c.	18.7	528	30.76	55.83	239.95	1585.6	0.1225

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* The food values for a large number of recipes are published in The Dietary Computer, by Ellen H. Richards.

† c. denotes cup; tsp. denotes teaspoon.

‡ It is usually more satisfactory to take total weight and measure after the dish is cooked, so as to know the food value of a given amount of the finished product.

PROBLEM VI.

TO FIND THE DISTRIBUTION OF THE FOODSTUFFS IN A STANDARD PORTION OF A SINGLE FOOD MATERIAL.

While the standard portion is of most convenience in estimating the total energy value of a given dietary, it may also serve as a means of indicating the amount of protein, fat or carbohydrate furnished, if we calculate the weight of each foodstuff in the standard portion itself. Having determined the weight of each nutrient in one gram of the food material (according to Problem II), it is simply necessary to multiply these values by the weight of the standard portion in grams. Thus in the case of cows' milk,

	Protein, Gm.	Fat, Gm.	Carbohydrate, Gm.
Weight of each food-stuff in one gram	0.033	0.04	0.05
Weight of one Standard Portion	144.5 Gm.		
Total weight of each foodstuff in one Standard Portion	4.7685	5.780	7.225

These results may be verified by multiplying the weight of protein, fat and carbohydrate by the factors for fuel values (cf. Problem III); the sum of the products will be 100 Calories.

Protein .... 4.7685 × 4 = 19.074 Calories.
Fat .... 5.780 × 9 = 52.020 Calories.
Carbohydrate .... 7.225 × 4 = 28.900 Calories.
Total .... 99.994 Calories.

It is often convenient to express the distribution of foodstuffs in a standard portion entirely in terms of energy value. From the calculations above it is evident that a standard portion of milk will yield, in round numbers, the following:

Calories from Protein	Calories from Fat	Calories from Carbohydrate	Total Calories
19	52	29	100

PROBLEM VII.

TO FIND A STANDARD PORTION OF ANY COMBINATION OF FOOD MATERIALS.

Standard portions of single food materials which are fairly constant in composition, may be permanently tabulated for reference, but in the case of mixtures great variation in food value is possible, even in recipes containing only three or four different ingredients, and the comparison of Standard Portions of various dishes in which the food values are purposely modified (as by using skim milk for whole milk, half water and half milk instead of milk only) is most profitable. It is necessary, therefore, to be able to calculate the food values for a standard portion of any mixture of food material.

The first step is to determine the total food values for the recipe, as described in Problem IV.

Having ascertained the total fuel value, *the per cent of the whole required to give 100 Calories* is found by dividing 100 by the total number of Calories yielded by the recipe. Taking this per cent of the total weight, measure, food values, etc., of the recipe, will give the measure, weight and distribution of foodstuffs in the Standard Portion.

For example, take the recipe for One Egg Cake in Problem IV. The totals are as follows:

Measure (Uncooked)	Weight (Uncooked), Ounces	Grams	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Calories	Cost
3 c.	18.7	528	30.76	55.83	239.95	1585.6	$0.1225

Dividing 100 by 1585.6, gives 0.063, *i.e.*, 6.3 per cent of the whole is required to yield 100 Calories.

Multiplying the totals by 0.063, we have the value for one Standard Portion, as follows:

Measure (Uncooked)	Weight (Uncooked). Ounces	Protein, Grams	Fat, Crams	Grams	Carbohydrate, Grams	Calories	Cost
⅕ c.	1.18	33.3	1.94	3.52	15.12	100	$0.0077

The total weight of the finished product is not the same as the combined weights of the ingredients in most cases, on account of changes in water content, but if the same *proportion* of the total weight or measure of cooked material is always taken for the

Recipe: **One Egg Cake.** **Date:**

Material	Measure	Weight		Protein, Gm.	Fat, Gm.	Carb., Gm.	Calories	Cost Dollars
		Oz.	Gm.					
Butter	¼ c.	2.0	57	0.57	48.45	—	438.3	0.0450
Sugar	½ c.	3.9	105	—	—	105.00	420.0	0.0137
Egg	1	2.0	57	6.78	5.30	—	74.8	0.0300
Milk (skimmed)	½ c.	4.3	122	4.15	0.36	6.22	44.7	0.0050
Flour	1½ c.	6.0	172	19.26	1.72	128.73	607.8	0.0132
Baking powder	2½ tsp.	0.5	15	—	—	—	—	0.0156
Totals (uncooked)	3 c.	18.7	528	30.76	55.83	239.95	1585.6	0.1225
Standard Portion	Per cent of recipe 6.3	1.18	33	1.94	3.52	15.12	100	0.0077
1 Serving	12.5	2.34	66	3.84	6.98	29.99	198.2	0.0153

Computed by:

standard portion, no serious difficulties will be encountered. When a recipe is made, it is also well to consider the number of ordinary servings which it will make, and to calculate the food value for the individual portion. Such records are very useful in planning dietaries, saving time in calculation, especially if kept on uniform cards in a file. The foregoing shows a complete record on a convenient model.

PROBLEM VIII.

TO ANALYZE A RECIPE.

In studying the economics of the dietary, it is interesting to know what proportion of the energy value is contributed by each ingredient, and how this compares with the percentage of the cost due to each, thus obtaining an idea of the comparative economy of each component. In the case of the One Egg Cake, in Problem V, we obtained the following fuel values and cost:

Food Material	Calories	Cost
Butter	438.3	$0.0450
Sugar	420.0	0.0137
Egg	74.8	0.0300
Milk (skimmed)	44.7	0.0050
Flour	607.8	0.0132
Baking powder	0.0	0.0156
Totals	1585.6	0.1225

Comparing the calories from butter with the total calories, we find that the former constitute 27.6 per cent of the whole (438.3 ÷1585.6 = 0 276). Comparing similarly the cost of the butter with the total cost, it is found to be 36.7 per cent of the total.

In like manner, the relative values for the other ingredients may be found, and the whole tabulated for reference on the back of the recipe card:

Food Material	Per Cent of Total Calories	Per Cent of Total Cost
Butter	27.6	36.7
Sugar	26.5	11.2
Egg	4.7	24.4
Milk	2.8	4.0
Flour	38.3	10.8
Baking powder	0.0	12.7

From inspection of the above, it is evident that the egg is the most expensive item on the basis of fuel value, since the proportion of energy contributed is only about one-fifth of the proportion of money expended for it, and flour is the cheapest, the per cent of fuel being about three and one-half times greater than the per cent of cost. Such studies are helpful in attempts to lower the cost or raise the fuel value of the ordinary cook-book recipe.

PROBLEM IX.

TO MODIFY COWS' MILK TO A PRESCRIBED FORMULA.

The modification of cows' milk for infants is accomplished in a variety of ways, according to the needs of the individual child, but these are all dependent upon a clear understanding of the percentage relations of the milk to be modified and the formula to be filled. The general principles are very simple.

First, select milk of such composition as to have the same ratio of fat to protein as is indicated in the formula.

Second, dilute this milk enough times to give the desired percentage of fat.

Third, add enough milk sugar to give the required percentage of carbohydrate.

Suppose the requirement for the baby to be as follows:

Number of Feedings in 24 Hours	Amount at Each Feeding, Ounces	Composition.		
		Protein, Per Cent	Fat, Per Cent	Carbohydrate Per Cent
8	3	2	3.1	7

The ratio of fat to protein in this case is 3.1 to 2, or 1.6 to 1.0. In average whole milk it is 4.0 to 3.3, or 1.21 to 1; it is therefore obviously necessary to select a milk with a higher proportion of fat Inasmuch as cream rises to the top, the upper layers have relatively more fat and less protein and carbohydrate than the lower layers. The exact amount in any given layer can be obtained only by chemical analysis, but from a table of such analyses we can select a milk which will have the proper ratio with little difficulty, as shown below.

TABLE XIV.

Average Composition of Top Milk after Standing from Twelve to Twenty-four Hours in the Quart Bottle.*

	Fat, Per Cent	Protein, Per Cent	Sugar, Per Cent	Ratio of Fat to Protein
Upper 1 ounce	22.5	2.8	4.0	8.0 : 1
Upper 2 ounce	21.5	2.8	4.0	7.7 : 1
Upper 4 ounce	20.0	2.8	4.0	7.1 : 1
Upper 6 ounce	17.0	2.9	4.2	5.9 : 1
Upper 8 ounce	14.0	3.0	4.3	4.7 : 1
Upper 10 ounce	11.5	3.0	4.3	3.8 : 1
Upper 12 ounce	9.8	3.1	4.5	3.2 : 1
Upper 16 ounce	7.6	3.1	4.6	2.5 : 1
Upper 20 ounce	6.2	3.2	4.7	1.9 : 1
Upper 24 ounce	5.2	3.2	4.8	1.6 : 1
Upper 28 ounce	4.5	3.3	4.8	1.4 : 1
Whole quart	4.0	3.3	4.8	1.21 : 1

* Included by the courtesy of Prof. H. C. Sherman.

Inspection of the above table shows that the upper 24 ounces will have the desired ratio. But this will have the following composition:

Protein Per Cent	Fat Per Cent	Carbohydrate Per Cent
3.2	5.2	4.8

In other words, the percentage of fat is 1.67 times as high as required (5.2 ÷ 3.1); consequently the 24 ounces of milk taken from the top of the bottle with a dipper will have to be diluted 1.67 times; *i. e.*, 24 ounces × 1.67 = 40.0 ounces required in all. We must therefore add 16.0 ounces of water (40 − 24). Dividing the percentages of the undiluted 24 ounces by 1.67, the composition of the diluted solution will be:

Protein Per Cent	Fat Per Cent	Carbohydrate Per Cent
1.9+ (3.2 ÷ 1.67)	3.1 (5.2 ÷ 1.67)	2.87 (4.8 ÷ 1.67)

Having adjusted the protein and fat by selecting milk of the proper ratio of fat to protein, and diluting to give the desired percentage of fat, which also dilutes the protein to the desired percentage, it remains to adjust the carbohydrate.

The carbohydrate now present constitutes 2.87 per cent. Therefore we must add enough milk sugar to make an increase of 4.13

per cent (7 – 2.87) of the total amount of solution, 40.0 ounces:

4.13 per cent of 40 ounces = 1.65 ounces, the amount of milk sugar to be added.

When the desired ratio of fat to protein is less than 1.2, some of the upper layers will have to be removed, and the rest of the milk in the bottle throughly mixed for use.

For example, taking the upper one ounce from the bottle indicated above, will give a milk of approximately the following composition:

Protein Per Cent	Fat Per Cent	Carbohydrate Per Cent	Ratio of Fat to Protein
3.3	3.4	4.8	1.03 : 1

PROBLEM X.

TO FIND THE PERCENTAGE COMPOSITION OF A FOOD MIXTURE.

Since the feeding of infants is commonly conducted according to the percentage method indicated in Problem IX, the ability to determine the percentage of each of the foodstuffs in any prescribed diet is as necessary as ability to modify milk according to a prescribed formula.

Given, for instance, such a prescription as the following, what per cent of protein, fat, and carbohydrate does it contain?

Whole milk, 16 ounces (by volume).
Barley water, 16 ounces (containing 0.25 ounce of barley flour).
Milk sugar, 1 ounce.

It is first necessary to determine the total amount of each of the foodstuffs, as in Problem IV. The results are as follows:

Food Material	Measure	Weight		Protein, Grams	Fat, Grams	Carbohydrate, Grams
		Ounces	Grams			
Milk	2 cups	17.2	487.60	16.09	19.50	24.38
Barley flour	½ tbsp.	0.25	7.08	0.74	0.16	5.10
Milk sugar	3 tbsp.	1.0	28.35	—	—	28.35
Water	2 cups	16.0	453.60	—	—	—
Totals		34.45	976.53	16.83	19.66	57.83

Having the total weight of the mixture, it is now a simple matter to determine what per cent of this is represented by each ingredient:

Protein: 16.83 ÷ 976.53 = 0.0172, or 1.72 per cent.
Fat: 19.66 ÷ 976.53 = 0.0201, or 2.01 per cent.
Carbohydrate: 57.83 ÷ 976.53 = 0.0592, or 5.92 per cent.

PROBLEM XI.

TO MAKE A COMPLETE DIETARY.

The dietary may be considered from two points of view: first, as a record of food actually consumed by a given number of persons in a given period; second, as a prescription of the food to be provided for certain individuals for a stated time. In either case, its value is increased by so arranging the report as to show not only the nutritive value of the diet, but also its cost and menu, thus presenting as clear a picture as possible of the food consumed, or a definite working plan for preparing the diet proposed. Since the data are frequently numerous, the work is much facilitated by suitable blanks, a convenient set consisting of five sheets, whose use is shown in the example of a complete dietary below.

Sheet Number I gives general information with regard to the subjects of the study; it shows their individual requirements and affords a means of comparing one study with another by reducing both to a uniform basis, either "per capita" or "per man" per day. The tables in the section on Food Requirements (Tables I–XII) will be of assistance in determining food requirements of individuals of different ages, weights and muscular activity.

Sheet Number II is designed to give as accurately as possible a picture of how the food will appear upon the table. The amounts should be stated for each dish in some way which will make the plan easy to follow in preparing the meals. Ordinarily, common measures (cups, tablespoons, etc.) will be most satisfactory, but in the laboratory it is frequently desirable that weights be stated, especially when several persons are engaged in preparing the day's ration, to avoid discrepancies due to inaccurate measurement. This careful statement of amounts serves also as a check against omitting in the computation of food values articles essential to the success of the menu.

Sheet Number III indicates the total quantities of each kind of material required for the dietary, summarized from sheets IV and V, and the market prices upon which the actual cost of the food materials on Sheet IV is based, giving the market unit which it is necessary to purchase in order to obtain these prices. Thus it may serve to show the different results of buying in large and small quantities, if the net weight of the food materials is taken at the time of purchase. It also provides a useful check on the accuracy of the calculations of the cost of small quantities. The statements as to the place and date of purchase afford criteria as to whether good judgment has been exercised in marketing, inasmuch as cost varies so greatly with locality and season.

The special aim of this sheet is to furnish a convenient marketing list and to guard against attractive menus with that underestimation of cost which tends to discredit dietary calculations as impractical, especially among those who do not realize how much can be accomplished by skillful choice and preparation of food materials. When the dietaries are to be prepared and the students do not buy the materials, Sheet III can be used to advantage as a requisition sheet.

Sheet Number IV is the detailed statement of the nutritive value and cost of the whole dietary. Where cost is involved, it is usually easier to make the calculations on food materials as purchased; if the food values are for edible material this should be definitely stated. At the end, space is arranged for a summary and comparison with the standard proposed on the first sheet. Differences of not more than five per cent may be considered negligible, but a slight excess is always better than a deficit, especially if no allowance is made for kitchen or table waste, which often amounts to ten per cent or more.

Sheet Number V provides for a statement of food combinations used in the menu, and if the calculations on the original food materials are tabulated on Sheet IV nothing more than weights and measures of the different ingredients will be required. If the recipe is calculated in detail on this sheet, then only the totals need be copied on Sheet IV. When recipe cards are on file, they may be referred to by number. Without this sheet, it is difficult for any one but the persons who planned the dietary to know how the different dishes proposed are to be made, and often important ingredients are omitted entirely.

AN EXAMPLE OF A COMPLETE DIETARY.

DIETARY SHEET No. I.

Persons served: *One Child.*

No. meals served: *Four.*

No. days: *One.*

Place: *New York City.*

Date: *August , 1911.*

METHOD OF ESTIMATING FOOD REQUIREMENTS.

For energy: *70 Calories per Kilogram.*

For protein: *10-15 Per cent of total fuel in form of Proteins.*

PROPOSED INDIVIDUAL STANDARDS.

Sex.	Age.	Weight. Lbs.	Weight. Kg.	Protein, Gms.	Fuel Value, Calories	Cost, Dollars
Boy	*10 years*	*63*	*28.5*	*50-75*	*1995*	*0.28*

PROPOSED STANDARD PER CAPITA PER DAY.

Protein, Gms.	Fuel Value, Calories	Cost, Dollars

PROPOSED STANDARD PER MAN PER DAY.

Protein, Gms.	Fuel Value, Calories	Cost, Dollars

DIETARY SHEET NO. II.

MENUS.

Meal	Dishes	Amounts
Breakfast, 8:00 A. M.	*Canteloupe*	*1/2 small one*
	Farina	*3/4 c.* cooked*
	Top milk for mush	*2/3 c.*
	Toast	*2 slices bread*
	Butter	*3/4 tb.**
	Milk to drink	*2/3 c.*
Dinner, 12:00 P. M.	*Creamed halibut*	*3/4 c.*
	Baked potato	*1 medium*
	Sliced tomatoes	*1 small one*
	Bread	*1 slice*
	Butter	*1/2 tb.*
	Milk sherbet	*3/4 c.*
Lunch, 3:00 P. M.	*Bread*	*1 slice*
	Butter	*3/4 tb.*
Supper, 6:00 P. M.	*Poached egg*	*1 egg*
	on	
	Toast	*1 slice bread*
	Apple sauce	*1/2 c.*
	Bread	*1 slice*
	Butter	*1/2 tb.*
	Cornstarch blanc mange	*2/3 c.*
	Milk........2/3 c. sugar	*1 tsp.*

* c. denotes cup; tb. denotes tablespoon.

DIETARY SHEET NO. III.

PRICE LIST.

Material	Total Required	Market Price	Weight of Market Unit, Ounces	Place of Purchase	Date
Canteloupe	*1/2 melon*	*3 for 25 c.*	*36.0*	*Upper West Side, New York City.*	*August, 1911*
Farina	*1 oz.*	*15 c. per pkg.*	*29.0*		
Milk	*1 qt.*	*9c. per qt.*	*34.4*		
Bread	*1/3 loaf*	*5c. per loaf*	[illegible]		
Butter	*3 lb. (1.6 oz.)*	*32c. per lb.*	*16.0*		
Halibut steak	*1 1/2 oz.*	*18c. per lb.*	*16.0*		
Potatoes	*1 medium*	*25c. per pk.*	*150.0*		
Eggs	*1*	*36c. per doz.*	*24.0*		
Apples	*1 small*	*12c. per qt.*	*32.0*		
Cornstarch	*2 lb.*	*10c. per pkg.*	*16.0*		
Tomatoes	*1 small*	*10c. per lb.*	*16.0*		
Lemons	*1*	*3 for 5c.*	*4 oz. juice*		
Sugar	*2 3/4 oz.*	*1/2 lb. for 20c.*	*56.0*		
Vanilla	*1/4 tsp.*	*25c. per bottle*	*2 0*		
Flour	*3/4 lb.*	*24 1/2 lbs. for 90c.*	*392.0*		

DIETARY SHEET NO. IV.

NUTRITIVE VALUE AND COST.

Material	Weight Oz.	Weight Gms.	Protein, Gms.	Fuel Value, Calories.	Cost, Dollars
Canteloupe	6.00	170.00	0.54	33.6	0.0400
Farina	0.97	27.60	3.04	100.0	0.0049
Milk	17.20	487.50	18.09	337.5	0.0450
Bread	4.00	113.40	10.52	293.6	0.0164
Butter	1.25	42.6	0.35	272.4	0.0125
Creamed halibut	See Sheet V.		11.45	210.5	0.0381
Potato	4.00	113.4	2.04	76.0	0.0032
Milk sherbet	See Sheet V.		4.88	270.7	0.0249
Egg	2.00	56.7	6.74	74.3	0.0300
Apple sauce	See Sheet V.		0.25	125.4	0.0227
Cornstarch blanc mange	See Sheet V.		5.24	204.8	0.0222
Tomatoes	2.00	56.7	0.52	13.0	0.0200
Sugar (with blanc mange)	0.25	7.1	—	28.4	0.0006
TOTALS			63.66	2036.2	0.2805
STANDARD			50–75	1995.0	0.2800
DIFFERENCE				+41.2 (2%)	+0.0005 (0.2%)

DIETARY SHEET NO. V.

RECIPES.

Name	Materials	Measure	Weight		Protein, Gms.	Total Calories	Cost, Dollars
			Oz.	Gms.			
Creamed halibut	Halibut flaked	⅓ c.	1.50*	42.6	5.88	38.4	0.0186
	Milk	½ c.	4.30	121.9	4.88	84.3	0.0113
	Flour	¾ tb.	0.18	5.3	0.60	18.6	0.0004
	Butter	¾ tb.	0.35	9.0	0.09	69.2	0.0078
	Salt	To season					
Totals		¾ c.			11.45	210.5	0.0381
Milk sherbet	Milk	½ c.	4.30	121.9	4.88	84.3	0.0113
	Sugar	3 tb.	1.50	42.6	—	180.4	0.0056
	Lemon juice	1 tb.	0.50	14.2	—	6.0	0.0080
Totals		¾ c.			4.88	270.7	0.0249
Apple sauce	Apple	1 small	3.00	85.0	0.25	40.2	0.0200
	Sugar	1½ tb.	0.75	21.3	—	85.2	0.0027
	Water	2 tb.	1.00	28.4	—	—	—
Totals		½ c.			0.25	125.4	0.0227
Cornstarch blanc mange	Milk	⅔ c.	5.60	159.2	5.24	109.8	0.0148
	Cornstarch	2 tb.	0.65	18.5	—	66.6	0.0040
	Sugar	½ tb.	0.25	7.1	—	28.4	0.0009
	Vanilla	¼ tsp.					0.0025
	Salt	speck					
Totals					5.24	204.8	0.0222

* As purchased.

PROBLEM XII.

TO SCORE A DIETARY.

In the laboratory it is frequently desirable to set out and compare two or more dietaries at the same time, and inasmuch as there are many factors to be taken into consideration besides supplying a specified amount of fuel at a given price, such as the adaptation of the diet to the locality, season, idiosyncrasies of the individual, availability of the food materials as prepared for the table, some of these factors often being overemphasized at the expense of others more important, it is believed that a dietary score card will help to give a clearer idea of the relative importance of the points which must generally be taken into consideration.

A Dietary Score Card.

Name of person or group..

Place.. Date..

Price of dietary.................................... Annual income....................................

Total Score....100 Points.

	Possible Score.	Points Deficient.	Actual Score.
FOOD VALUE..............................60 Points			
Fuel Value..............................40 Points			
Consider adaptation to weight, age and amount of muscular activity of each individual.	40		
Protein (considered as the source of nitrogen) 10 Points	10		
Is it suitable in kind and amount with regard to age and weight?			
Ash Constituents..............................10 Points	10		
Are the following adequate?			
Phosphorus			
Iron			
Calcium			
FOOD SELECTION..............................22 Points			
Adaptation to Individual..............................10 Points	10		
Digestibility—ease, rapidity, etc.			
Variety—in food materials, form, color, etc.			
Quality of food materials—sanitary conditions, etc.			
Bulk			
Adaptation to Income..............................12 Points	12		
Is return on investment good?			
Is expenditure proportioned properly to total income?			
Is undue amount spent for flavor, form, color?			
FOOD PREPARATION AND SERVICE 18 Points			
Cookery..............................12 Points	12		
Does it increase or decrease digestibility?			
Is there a waste of materials?			
(through under or over-cooking?)			
Is there a waste of time?			
Of energy?			
Is flavor preserved?			
Is form preserved?			
Is color preserved?			
Menu..............................3 Points	3		
Are combinations good physiologically and esthetically?			
Are sequences of dishes good, considering distribution of nutrients, form, color and flavor?			
Service..............................3 Points	3		
Is it regular?			
Is it neat?			
Is it orderly?			
Is it quiet?			

In judging the menus, the following general rules for the making of a menu should be borne in mind:

1. Conceive of the whole day as the unit, rather than the individual meal.

2. Endeavor to distribute the protein, fat and carbohydrate through the day, so that no meal will have a striking preponderance of one kind of foodstuff.

For example, meat served with macaroni and cheese concentrates the protein in one meal, potatoes with rice concentrate the starch, and fried potatoes and pie concentrate the fat.

3. With the exception of a few such staples as bread, butter and milk, try to avoid serving any food in the same form twice in the same day and serve it preferably only once in any form.

4. Try to avoid serving any food which gives character to a dish twice in the same meal, even in different forms. Do not, for instance, select tomato soup and tomato salad for the same meal.

5. At each meal, seek contrasts between successive courses, a bland course being followed by a more highly flavored course, and vice versa, to give a pleasing rhythm.

6. In each course endeavor to have harmonious combinations, as to flavor, color, form and texture.

7. As the number of courses increases, decrease the number of dishes and size of the servings in each.

Distribution of credits to the sub-topics has been left to the judgment of the person using the score card.

PART III.

REFERENCE TABLES.

TABLE XV.

Approximate Amount of Refuse in Common Food Materals as Purchased.*

	PER CENT.
BEEF.	
Brisket, medium fat	23
Corned	8
Chuck, lean	20
Flank, lean	1
Flank, medium fat	10
Heart	6
Kidney	20
Liver	7
Loin, lean	13
Loin, medium fat	13
Neck, lean	30
Neck, medium fat	28
Plate, medium fat	17
Porterhouse steak	13
Ribs, medium fat	21
Round, medium fat	7
Rump, lean	14
Rump, medium fat	21
Shank, fore, medium fat	37
Shank, hind, medium fat	54
Sirloin steak	13
Top sirloin	3
Tongue	27
EGGS.	
Hens'	11
FISH.	
Bass, black, whole	55
Bass, striped, whole	55
Blackfish, whole	60
FRUITS.	
Apples	25
Apricots	6
Bananas	35
Cherries	5
Dates, dried	10
Grapes	25
Lemons	30
Muskmelons	50
Nectarines	6
Oranges	27
Peaches	18
Pears	10
Plums	5
Prunes, dried	15
Raisins, dried	10
Strawberries	5
Watermelons	60
LAMB.	
Breast	19
Chops (broiled)	14
Leg, hind, medium fat	17
Loin	15
Neck	18
Shoulder	20
MUTTON.	
Chuck, medium fat	21
Flank, medium fat	10
Leg, medium fat	18
Loin, medium fat	16
Neck, medium fat	27
Shoulder, medium fat	22
NUTS.	
Almonds	45
Beechnuts	40
Brazil nuts	50
Butternuts	86
Chestnuts, fresh	16
Chestnuts, dried	24
Coconuts	48
Filberts	52
Hickory nuts	62
Peanuts	25
Pecans	46
Walnuts, black	74
Walnuts, soft shell	58
PORK.	
Bacon, smoked, medium fat	8
Feet, fresh	74
Feet, pickled	36
Ham, fresh, lean	1
Ham, fresh, medium fat	11

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* The figures are taken to the nearest whole number from Bull. 28, Office of Experiment Stations, U. S. Dept. Agriculture.

	PER CENT.
Ham, smoked, lean	11
Ham, smoked, medium fat	14
Head cheese	12
Loin chops, medium fat	20
Shoulder, fresh	12
Shoulder, smoked	18
Side (not including lard and kidney)	12
POULTRY AND GAME.	
Chicken Broilers	42
Fowl	26
Goose, young	18
Turkey	23
SAUSAGE.	
Bologna	3
Summer	7
VEAL.	
Breast, medium fat	20
Chuck, medium fat	19
Leg, medium fat	14
Loin, lean	22
Loin, medium fat	16
Neck	32
Rib, medium fat	25
Rump	30
Shank, fore	40
Shank, hind, medium fat	62
Shoulder, lean	18
Shoulder, medium fat	23
VEGETABLES.	
Beans, butter, green	50
Beans, lima, fresh	55
Beans, string	7
Beets	20
Cabbage	15
Carrots	20
Celery	20
Corn, green	61
Cucumbers	15
Lettuce	15
Okra	12
Onions	10
Parsnips	20
Peas, green	45
Potatoes	20
Pumpkins	50
Radishes	30
Rhubarb	40
Rutabagas	30
Squash	50
Turnips	30

TABLE XVI.

CONVERSION TABLE—GRAMS TO OUNCES.

Grams	Ounces	Grams	Ounces
1	0.035	56	1.975
2	0.071	57	2.010
3	0.106	58	2.046
4	0.141	59	2.081
5	0.176	60	2.116
6	0.212	61	2.151
7	0.247	62	2.187
8	0.283	63	2.222
9	0.317	64	2.257
10	0.353	65	2.293
11	0.398	66	2.328
12	0.423	67	2.363
13	0.458	68	2.398
14	0.494	69	2.434
15	0.529	70	2.467
16	0.564	71	2.504
17	0.599	72	2.539
18	0.635	73	2.575
19	0.670	74	2.610
20	0.705	75	2.645
21	0.741	76	2.681
22	0.776	77	2.716
23	0.811	78	2.751
24	0.846	79	2.786
25	0.882	80	2.822
26	0.917	81	2.857
27	0.953	82	2.892
28	0.998	83	2.927
29	1.023	84	2.963
30	1.058	85	2.998
31	1.093	86	3.033
32	1.128	87	3.068
33	1.164	88	3.104
34	1.199	89	3.139
35	1.234	90	3.174
36	1.269	91	3.210
37	1.305	92	3.245
38	1.340	93	3.280
39	1.376	94	3.315
40	1.411	95	3.351
41	1.446	96	3.386
42	1.481	97	3.421
43	1.517	98	3.457
44	1.552	99	3.492
45	1.587	100	3.527
46	1.622	113	4
47	1.658	200	7
48	1.693	227	8
49	1.728	250	8.8
50	1.764	300	10.5
51	1.799	400	14
52	1.834	453.6	16
53	1.869	500	17.6
54	1.905	907	32
55	1.940	1000	35.2

TABLE XVII.

Conversion Table—Ounces to Grams.

Ounces	Grams	Ounces	Grams
1/16	1.77	2	56.70
1/15	1.89	3	85.05
1/14	2.02	4	113.40
1/13	2.19	5	141.75
1/12	2.36	6	170.10
1/11	2.58	7	198.45
1/10	2.84	8	226.80
1/9	3.15	9	255.15
1/8	3.54	10	283.50
1/7	4.05	11	311.84
1/6	4.73	12	340.20
1/5	5.67	13	368.54
1/4	7.09	14	396.90
1/3	9.45	15	425.25
1/2	14.17	16	453.60
1	28.35		

TABLE XVIII.

Conversion Table—Pounds to Grams.

Pounds.	Grams.
1	453.6
2	907
2.2	1000
3	1361
4	1814
5	2267
6	2722
7	3175
8	3629
9	4082
10	4536

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Bass, striped, whole, A. P.	...	...	.....	1	0.088	0.022	....	0.55	....
	...	...	1	.....	2.49	0.62	....	15.6	....
	...	1	.....	.....	39.92	9.98	....	249	....
	1	...	6.41	181.8	16.00	4.00	....	100	....
Bass, striped, whole, E. P.	...	...	.....	1	0.186	0.028	....	1.00	....
	...	...	1	.....	5.27	0.79	....	28.2	....
	...	1	.....	.....	84.38	12.70	....	452	....
	1	...	3.54	100.4	18.68	2.81	....	100	....
Beans, baked, canned	...	...	.....	1	0.069	0.025	0.196	1.29	....
	...	...	1	.....	1.96	0.71	5.56	36.5	....
	...	1	.....	.....	31.30	11.34	88.90	583	....
	1	...	2.74	77.8	5.37	1.95	15.25	100	....
Beans, kidney, red, canned,	...	...	.....	1	0.070	0.002	0.185	1.04	....
	...	...	1	.....	1.98	0.06	5.24	29.4	....
	...	1	.....	.....	31.68	0.91	83.84	470.08	....
	1	...	3.39	96.1	6.73	0.19	17.78	100	....
Beans, string, canned	...	...	.....	1	0.011	0.001	0.038	0.21	....
	...	...	1	.....	0.31	0.03	1.08	5.83	....
	...	1	.....	.....	4.98	0.45	17.23	93	....
	1	...	17.21	487.8	5.37	0.48	18.53	100	....
Beef, corned, A. P.	...	...	.....	1	0.143	0.238	....	2.71	....
	...	...	1	.....	4.05	6.75	....	76.9	....
	...	1	.....	.....	64.86	107.96	....	1231	....
	1	...	1.30	36.8	5.27	8.77	....	100	....
Beef, corned, E. P.	...	...	.....	1	0.156	0.262	....	2.98	....
	...	...	1	.....	4.42	7.43	....	84.5	....
	...	1	.....	.....	70.76	118.84	....	1353	....
	1	...	1.18	33.5	5.23	8.79	....	100	....
Beef, flank, medium fat, A. P.	...	...	.....	1	0.170	0.190	....	2.39	....
	...	...	1	.....	4.82	5.39	....	67.8	....
	...	1	.....	.....	77.11	86.18	....	1084	....
	1	...	1.47	41.8	7.11	7.95	....	100	....
Beef juice	...	...	.....	1	0.049	0.006	....	0.25	....
	...	...	1	.....	1.39	0.17	....	7.0	....
	...	1	.....	.....	22.24	2.72	....	113	....
	1	...	14.11	400.0	19.60	2.40	....	100	....
Beef, kidney, A. P.	...	...	.....	1	0.137	0.019	....	0.72	....
	...	...	1	.....	3.88	0.54	....	20.4	....
	...	1	.....	.....	62.14	8.62	....	326	....
	1	...	4.91	139.1	19.06	2.64	....	100	....

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* Calculated principally from Bulletin 28, Office of Experiment Stations, U. S. Department of Agriculture. For other foods see Table XIII.

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Beef, kidney, E. P.				1	0.166	0.048	0.004	1.11	
			1		4.71	1.36	0.11	31.5	
		1			75.30	21.77	1.81	504	
	1		3.17	89.9	14.92	4.31	0.36	100	
Beef, liver, A. P.				1	0.202	0.031	0.025	1.19	
			1		5.73	0.88	0.71	33.7	
		1			91.62	14.06	11.34	538	
	1		2.97	84.2	17.00	2.61	2.11	100	
Beef, liver, E. P.				1	0.204	0.045	0.017	1.29	
			1		5.78	1.28	0.48	36.5	
		1			92.53	20.41	7.71	584	
	1		2.73	77.6	15.83	3.49	1.31	100	
Beef, loin, lean, A. P.				1	0.171	0.111		1.68	
			1		4.85	3.15		47.7	
		1			77.57	50.35		763	
	1		2.09	59.4	10.16	6.59		100	
Beef, loin, lean, E. P.				1	0.197	0.127		1.93	
			1		5.58	3.60		54.7	
		1			89.36	57.61		876	
	1		1.83	51.8	10.18	6.57		100	
Beef, loin, medium fat, A. P.				1	0.161	0.175		2.22	
			1		4.56	4.96		62.9	
		1			73.03	79.38		1007	
	1		1.59	45.1	7.26	7.89		100	
Beef, loin, medium fat, E. P.				1	0.185	0.202		2.56	
			1		5.24	5.73		72.5	
		1			83.71	91.62		1160	
	1		1.38	39.1	7.23	7.90		100	
Beef, lungs, A. P.				1	0.164	0.032		0.94	
			1		4.65	0.91		26.8	
		1			74.39	14.51		428	
	1		3.74	106	17.37	3.39		100	
Beef marrow				1	0.022	0.928		8.44	
			1		0.62	26.31		239.3	
		1			9.92	420.94		3828	
	1		0.42	11.8	0.26	11.00		100	
Beef, navel, lean, A. P.				1	0.298	0.006		1.25	
			1		8.45	0.17		35.3	
		1			135.17	2.72		565	
	1		2.83	80.3	23.92	0.48		100	

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Beef, navel, lean, E. P.				1	0.307	0.006		1.28	
			1		8.70	0.17		36.4	
		1			139.50	2.72		582	
	1		2.75	78.0	23.95	0.47		100	
Beef, neck, lean, A. P.				1	0.151	0.059		1.14	
			1		4.28	1.67		32.2	
		1			68.50	26.76		515	
	1		3.11	88.1	13.30	5.20		100	
Beef, neck, lean, E. P.				1	0.214	0.084		1.61	
			1		6.07	2.38		45.7	
		1			97.08	38.10		731	
	1		2.19	62.0	13.27	5.21		100	
Beef, neck, medium fat, A. P.				1	0.145	0.119		1.65	
			1		4.11	3.37		46.8	
		1			65.76	53.98		749	
	1		2.14	60.6	8.78	7.21		100	
Beef, neck, medium fat, E. P.				1	0.201	0.165		2.29	
			1		5.70	4.68		64.9	
		1			91.18	74.84		1038	
	1		1.54	43.7	8.78	7.21		100	
Beef, plate, lean, A. P.				1	0.130	0.155		1.92	
			1		3.69	4.39		54.3	
		1			58.98	70.30		869	
	1		1.84	52.2	6.79	8.09		100	
Beef, plate, lean, E. P.				1	0.156	0.188		2.32	
			1		4.42	5.33		65.7	
		1			70.73	85.28		1051	
	1		1.52	43.2	6.74	8.12		100	
Beef, plate, medium fat, A. P.				1	0.138	0.244		2.75	
			1		3.91	6.92		77.9	
		1			62.60	110.69		1247	
	1		1.28	36.4	5.02	8.88		100	
Beef, plate, medium fat, E. P.				1	0.165	0.291		3.28	
			1		4.68	8.25		92.9	
		1			74.84	132.00		1487	
	1		1.08	30.5	5.03	8.87		100	
Beef, porter-house steak, A. P.				1	0.191	0.179		2.38	
			1		5.41	5.07		67.3	
		1			86.64	81.19		1077	
	1		1.48	42.1	8.04	7.54		100	

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Beef, porterhouse steak, E. P.				1	0.219	0.204		2.71	
			1		6.21	5.78		77.1	
		1			99.34	92.53		1230	
	1		1.30	36.9	8.07	7.52		100	
Beef, rib roll, lean, A. P.				1	0.202	0.105		1.75	
			1		5.73	2.98		49.7	
		1			91.62	47.63		795	
	1		2.01	57.0	11.52	5.99		100	
Beef, rib roll, medium fat, A. P.				1	0.193	0.167		2.28	
			1		5.47	4.74		64.5	
		1			87.54	75.75		1032	
	1		1.55	44.0	8.48	7.34		100	
Beef, ribs, lean, A. P.				1	0.152	0.093		1.45	
			1		4.31	2.64		40.97	
		1			68.95	42.18		655	
	1		2.44	69.2	10.52	6.43		100	
Beef, ribs, lean, E. P.				1	0.196	0.120		1.86	
			1		5.56	3.40		52.8	
		1			88.90	54.42		845	
	1		1.89	53.6	10.51	6.44		100	
Beef, ribs, medium fat, A. P.				1	0.139	0.212		2.46	
			1		3.94	6.01		69.9	
		1			63.03	96.16		1118	
	1		1.43	40.6	5.64	8.60		100	
Beef, ribs, medium fat, E. P.				1	0.175	0.266		3.09	
			1		4.96	7.54		87.7	
		1			79.38	120.66		1403	
	1		1.14	32.3	5.66	8.59		100	
Beef, round, lean, A. P.				1	0.195	0.073		1.44	
			1		5.53	2.07		40.7	
		1			88.45	33.11		652	
	1		2.45	69.6	13.57	5.08		100	
Beef, round, lean, E. P.				1	0.213	0.079		1.56	
			1		6.04	2.24		44.3	
		1			96.62	35.84		709	
	1		2.26	64.0	13.63	5.05		100	
Beef, round, medium fat, A. P.				1	0.190	0.128		1.91	
			1		5.39	3.63		54.2	
		1			86.18	58.06		867	
	1		1.85	52.3	9.94	6.70		100	

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbo-hydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Beef, round, medium fat, E. P.				1	0.203	0.136		2.04	
			1		5.76	3.86		57.7	
		1			92.07	61.69		923	
	1		1.73	49.1	9.96	6.68		100	
Beef, rump, lean, A. P.				1	0.191	0.110		1.75	
			1		5.42	3.12		49.7	
		1			86.64	49.90		796	
	1		2.01	57.0	10.89	6.33		100	
Beef, rump, lean, E. P.				1	0.209	0.137		2.07	
			1		5.93	3.88		58.7	
		1			94.80	62.14		938	
	1		1.70	48.3	10.10	6.62		100	
Beef, rump, medium fat, A. P.				1	0.138	0.202		2.37	
			1		3.91	5.73		67.2	
		1			62.60	91.62		1075	
	1		1.49	42.2	5.82	8.52		100	
Beef, rump, medium fat, E. P.				1	0.174	0.255		2.99	
			1		4.93	7.23		84.8	
		1			78.92	115.68		1357	
	1		1.18	33.4	5.82	8.53		100	
Beef, shank, hind, medium fat, A. P.				1	0.096	0.053		0.86	
			1		2.72	1.50		24.4	
		1			43.55	24.04		391	
	1		4.09	116.1	11.15	6.16		100	
Beef, shank, hind, medium fat, E. P.				1	0.209	0.115		1.87	
			1		5.92	3.26		53.0	
		1			94.80	52.16		849	
	1		1.88	53.4	11.17	6.15		100	
Beef, shoulder and clod, lean, A. P.				1	0.164	0.044		1.05	
			1		4.65	1.25		29.8	
		1			74.38	19.96		477	
	1		3.35	95.0	15.59	4.18		100	
Beef, shoulder and clod, lean, E. P.				1	0.204	0.054		1.30	
			1		5.78	1.53		36.9	
		1			92.52	24.49		591	
	1		2.71	76.8	15.67	4.15		100	
Beef, shoulder and clod, medium fat, A. P.				1	0.164	0.098		1.55	
			1		4.65	2.78		43.9	
		1			74.38	44.45		702	
	1		2.28	64.6	10.59	6.33		100	

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Beef, shoulder and clod, medium fat, E. P.				1	0.196	0.113		1.80	
			1		5.55	3.20		51.1	
		1			88.90	51.26		817	
	1		1.96	55.5	10.88	6.27		100	
Beef, sirloin steak, A. P.				1	0.165	0.161		2.11	
			1		4.68	4.56		59.8	
		1			74.84	73.03		957	
	1		1.67	47.4	7.82	7.63		100	
Beef, sirloin steak, E. P.				1	0.189	0.185		2.42	
			1		5.36	5.24		68.6	
		1			85.73	83.91		1098	
	1		1.46	41.3	7.87	7.64		100	
Beef, sweetbreads, A. P.				1	0.168	0.121		1.76	
			1		4.76	3.43		49.9	
		1			76.20	54.90		799	
	1		2.00	56.8	9.54	6.87		100	
Beef, tenderloin				1	0.162	0.244		2.84	
			1		4.59	6.92		80.6	
		1			73.48	110.69		1290	
	1		1.24	35.2	5.69	8.58		100	
Beef, tongue, fresh, A. P.				1	0.141	0.067		1.17	
			1		4.00	1.90		33.1	
		1			64.02	30.39		529	
	1		3.02	85.7	12.08	5.74		100	
Beef, tongue, fresh, E. P.				1	0.189	0.092		1.58	
			1		5.36	2.61		44.9	
		1			85.73	41.73		718	
	1		2.23	63.1	11.93	5.88		100	
Beef, tongue, pickled, A. P.				1	0.119	0.192		2.20	
			1		3.37	5.44		62.5	
		1			53.98	87.09		1000	
	1		1.60	45.4	5.40	8.71		100	
Beef, tongue, pickled, E. P.				1	0.128	0.205		2.36	
			1		3.63	5.81		66.8	
		1			58.06	92.98		1069	
	1		1.49	42.4	5.43	8.70		100	
Beef, top sirloin, A. P.				1	0.133	0.423		4.34	
			1		3.77	11.99		122.9	
		1			60.33	191.88		1968	
	1		0.81	23.1	3.06	9.75		100	

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight lbs.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Varbo-hydrate, Grams	Fuel Value, Calories	Cost, Dollars
Beef, top				1	0.138	0.437		4.49	
sirloin,			1		3.91	12.39		127.1	
E. P		1			62.60	198.21		2034	
	1		0.79	22.3	3.08	9.74		100	
Blackberries,				1	0.008	0.021	0.564	2.48	
canned,			1		0.23	0.60	15.98	70.2	
A. P.		1			3.63	9.53	255.83	1124	
	1		1.43	40.4	0.32	0.85	22.77	100	
Blueberries,				1	0.006	0.006	0.128	0.59	
canned,			1		0.17	0.17	3.63	16.7	
A. P.		1			2.72	2.72	58.08	268	
	1		5.98	169.5	1.02	1.02	21.70	100	
Bluefish, fresh,				1	0.100	0.006		0.45	
entrails			1		2.84	0.17		12.9	
removed,		1			45.36	2.72		206	
A. P.	1		7.77	220.4	22.04	1.32		100	
Bluefish, fresh,				1	0.194	0.012		0.88	
entrails			1		5.49	0.34		25.1	
removed,		1			87.99	5.44		401	
E. P.	1		3.99	113.1	21.95	1.36		100	
Bouillon				1	0.022	0.001	0.002	0.11	
			1		0.62	0.03	0.06	2.98	
		1			9.98	0.45	0.91	47.6	
	1		33.6	952.0	20.95	0.95	1.90	100	
Brazil nuts,				1	0.086	0.337	0.035	3.52	
A. P.			1		2.43	9.55	0.99	99.7	
		1			39.01	152.86	15.88	1595	
	1		1.01	28.4	2.44	9.58	0.99	100	
Brazil nuts,				1	0.170	0.668	0.070	6.97	
E. P.			1		4.81	18.93	1.98	197.6	
		1			77.11	303.10	31.75	3162	
	1		0.51	14.3	2.44	9.58	1.00	100	
Bread, brown				1	0.054	0.018	0.471	2.26	
			1		1.53	0.51	13.35	64.1	
		1			24.48	8.16	213.60	1026	
	1		1.56	44.2	2.39	0.79	20.82	100	
Bread, corn				1	0.079	0.047	0.463	2.59	
			1		2.24	1.33	13.13	73.5	
		1			35.83	21.32	210.00	1175	
	1		1.36	38.6	3.05	1.81	17.87	100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Bread, gluten				1	0.093	0.014	0.498	2.49	
			1		2.64	0.40	14.12	70.6	
		1			42.18	6.35	225.90	1130	
	1		1.42	40.2	3.74	0.56	20.09	100	
Bread, graham				1	0.089	0.018	0.521	2.60	
			1		2.52	0.51	14.77	73.8	
		1			40.37	8.16	236.40	1180	
	1		1.35	38.4	3.42	0.69	20.03	100	
Bread, rye				1	0.090	0.006	0.532	2.54	
			1		2.55	0.17	15.08	72.1	
		1			40.82	2.72	241.30	1153	
	1		1.39	39.3	3.54	0.24	20.93	100	
Bread, rye and wheat				1	0.119	0.003	0.515	2.56	
			1		3.37	0.09	14.60	72.7	
		1			53.98	1.36	233.60	1163	
	1		1.38	39.0	4.64	0.12	20.09	100	
Bread, white, home made				1	0.091	0.016	0.533	2.64	
			1		2.58	0.45	15.11	74.8	
		1			41.27	7.26	241.75	1198	
	1		1.34	37.9	3.45	0.61	20.19	100	
Bread, white, cream				1	0.098	0.009	0.550	2.67	
			1		2.78	0.26	15.59	75.8	
		1			44.45	4.08	249.50	1212	
	1		1.32	37.4	3.67	0.34	20.58	100	
Bread, white, milk				1	0.096	0.014	0.511	2.55	
			1		2.72	0.40	14.49	72.4	
		1			43.55	6.35	231.75	1158	
	1		1.38	39.2	3.76	0.55	20.01	100	
Bread, white, Vienna				1	0.094	0.012	0.541	2.65	
			1		2.67	0.34	15.34	75.1	
		1			42.64	5.44	245.39	1201	
	1		1.33	37.9	3.55	0.45	20.43	100	
Bread, whole wheat				1	0.097	0.009	0.497	2.46	
			1		2.75	0.26	14.09	69.7	
		1			44.00	4.08	225.44	1115	
	1		1.44	40.7	3.95	0.37	20.23	100	
Buckwheat, flour				1	0.064	0.012	0.779	3.48	
			1		1.81	0.34	22.08	98.7	
		1			29.03	5.48	353.40	1577	
	1		1.01	28.7	1.84	0.34	22.39	100	

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Buckwheat, farina and groats				1	0.041	0.004	0.841	3.56	
			1		1.17	0.11	23.84	101.0	
		1			18.59	1.81	381.48	1617	
	1		0.99	28.1	1.15	0.11	23.60	100	
Butterfish, whole, A. P.				1	0.103	0.063		0.98	
			1		2.92	1.79		27.8	
		1			46.74	28.58		444	
	1		3.61	102.2	10.52	6.43		100	
Butterfish, whole, E. P.				1	0.180	0.110		1.71	
			1		5.10	3.12		48.5	
		1			81.64	49.90		776	
	1		2.06	58.5	10.53	6.43		100	
Butter milk,				1	0.030	0.005	0.048	0.36	
			1		0.85	0.14	1.36	10.1	
		1			13.61	2.27	21.82	162	
	1		9.86	279.6	8.39	1.40	13.42	100	
Butternuts, A. P.				1	0.038	0.083	0.005	0.92	
			1		1.08	2.35	0.14	26.1	
		1			17.24	37.65	2.27	417	
	1		3.84	108.8	4.14	9.03	0.54	100	
Butternuts, E. P.				1	0.279	0.612	0.035	6.76	
			1		7.91	17.35	0.99	191.8	
		1			126.55	277.60	15.86	3068	
	1		0.52	14.8	4.13	9.05	0.52	100	
Calf's-foot jelly, A. P.				1	0.043		0.174	0.87	
			1		1.22		4.93	24.6	
		1			19.50		78.92	394	
	1		4.06	115.2	4.95		20.05	100	
Catfish, A. P.				1	0.116	0.166		1.96	
			1		3.29	4.71		55.5	
		1			52.62	75.30		888	
	1		1.80	51.1	5.92	8.48		100	
Catfish, E. P.				1	0.144	0.206		2.43	
			1		4.08	5.84		68.9	
		1			65.32	93.44		1102	
	1		1.45	41.2	5.93	8.48		100	
Cereal coffee (infusion)				1	0.002		0.014	0.06	
			1		0.06		0.40	1.8	
		1			0.91		6.35	29	
	1		55.06	1561.0	3.13		21.88	100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Cerealine				1	0.096	0.011	0.783	3.62	
			1		2.72	0.31	22.20	102.5	
		1			43.55	4.99	35.52	1640	
	1		0.98	27.7	2.66	0.30	21.66	100	
Cheese, cheddar				1	0.277	0.368	0.041	4.58	
			1		7.85	10.43	1.16	130.0	
		1			125.64	166.90	18.60	2079	
	1		0.77	21.8	6.04	8.03	0.89	100	
Cheese, cottage, A. P.				1	0.209	0.010	0.043	1.10	
			1		5.92	0.28	1.21	31.1	
		1			94.80	4.54	19.51	498	
	1		3.21	91.1	19.04	0.91	3.92	100	
Cheese, Fromage de Brie, A. P.				1	0.159	0.210	0.014	2.58	
			1		4.51	5.95	0.40	73.2	
		1			72.12	95.25	6.35	1171	
	1		1.36	38.7	6.16	8.13	0.54	100	
Cheese, full cream, A. P.				1	0.259	0.337	0.024	4.17	
			1		7.34	9.55	0.68	118.0	
		1			117.48	152.84	10.88	1888	
	1		0.85	24.0	6.22	8.09	0.58	100	
Cheese, pineapple, A. P.				1	0.299	0.389	0.026	4.80	
			1		8.48	11.04	0.74	136.1	
		1			135.60	176.44	11.79	2178	
	1		0.73	20.8	6.23	8.10	0.54	100	
Cheese, Roquefort, A. P.				1	0.226	0.295	0.018	3.63	
			1		6.41	8.36	0.51	102.9	
		1			102.50	133.80	8.16	1647	
	1		0.97	27.5	6.22	8.13	0.49	100	
Cheese, Swiss, A. P.				1	0.276	0.349	0.013	4.30	
			1		7.82	9.89	0.37	121.8	
		1			125.18	158.30	5.90	1949	
	1		0.82	23.3	6.42	8.12	0.30	100	
Cherries, candied				1	0.005	0.002	0.862	3.48	
			1		0.14	0.04	24.43	98.6	
		1			2.22	0.68	390.80	1578	
	1		1.01	28.7	0.14	0.04	24.76	100	
Cherries, canned				1	0.011	0.001	0.211	0.90	
			1		0.31	0.03	5.98	25.4	
		1			4.99	0.45	95.62	407	
	1		3.93	111.5	1.23	0.11	23.52	100	

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbo-hydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Chestnuts, dried, A. P.				1	0.081	0.053	0.564	3.06	
			1		2.30	1.50	15.99	86.6	
		1			36.74	24.04	255.81	1386	
	1		1.15	32.7	2.65	1.73	18.45	100	
Chestnuts, dried, E. P.				1	0.107	0.070	0.742	4.03	
			1		3.03	1.98	21.04	114.2	
		1			48.54	31.75	336.58	1828	
	1		0.87	24.8	2.66	1.74	18.44	100	
Chestnuts, fresh, A. P.				1	0.052	0.045	0.354	2.03	
			1		1.47	1.27	10.04	57.5	
		1			23.58	20.41	160.57	920	
	1		1.74	49.3	2.56	2.21	17.25	100	
Chestnuts, fresh, E. P.				1	0.062	0.054	0.421	2.42	
			1		1.76	1.53	11.94	68.6	
		1			28.12	24.49	190.96	1097	
	1		1.46	41.3	2.56	2.23	17.39	100	
Chickens, broilers, A. P.				1	0.128	0.014		0.64	
			1		3.63	0.40		18.1	
		1			58.06	6.35		289	
	1		5.53	156.7	20.06	2.19		100	
Chickens, broilers, E. P.				1	0.215	0.025		1.09	
			1		6.10	0.71		30.8	
		1			97.60	11.36		492.3	
	1		3.27	92.6	19.91	2.32		100	
Chicken gizzard, A. P.				1	0.247	0.014		1.11	
			1		7.00	0.39		31.6	
		1			112.00	6.35		505	
	1		3.17	89.8	22.18	1.26		100	
Chicken heart, A. P.				1	0.207	0.055		1.32	
			1		5.87	1.56		37.5	
		1			93.88	24.95		600	
	1		2.67	75.6	15.65	4.16		100	
Chicken liver, A. P.				1	0.224	0.042	0.024	1.37	
			1		6.35	1.19	0.68	38.8	
		1			101.60	19.05	10.88	621	
	1		2.58	73.0	16.35	3.07	1.75	100	
Citron, dried, A. P.				1	0.005	0.015	0.781	3.28	
			1		0.14	0.42	22.14	93.0	
		1			2.27	6.80	354.30	1487	
	1		1.08	30.5	0.15	0.46	23.82	100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS. — *Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Clams, long, in shell, A. P.				1	0.050	0.006	0.011	0.30	
			1		1.42	0.17	0.31	8.4	
		1			22.68	2.72	4.99	136	
	1		11.87	335.6	16.78	2.01	3.69	100	
Clams, long, in shell, E. P.				1	0.086	0.010	0.020	0.51	
			1		2.44	0.28	0.57	14.6	
		1			39.01	4.53	9.07	231	
	1		6.86	194.6	16.74	1.95	3.89	100	
Clams, round, in shell, E. P.				1	0.065	0.004	0.042	0.46	
			1		1.84	0.11	1.19	13.1	
		1			29.48	1.81	19.05	210	
	1		7.61	215.5	14.01	0.86	9.05	100	
Cocoanut, prepared, A. P.				1	0.063	0.574	0.315	6.68	
			1		1.79	16.27	8.93	189.3	
		1			28.58	260.35	142.88	3028	
	1		0.53	15.0	0.94	8.59	4.69	100	
Cocoanuts, A. P.				1	0.029	0.259	0.143	3.02	
			1		0.82	7.34	4.05	85.6	
		1			13.15	117.48	64.86	1369	
	1		1.17	33.1	0.96	8.58	4.74	100	
Cocoanuts, E. P.				1	0.057	0.506	0.279	5.90	
			1		1.62	14.34	7.91	167.2	
		1			25.85	229.50	126.55	2675	
	1		0.60	16.9	0.97	8.58	4.73	100	
Cod, dressed, A. P.				1	0.111	0.002		0.46	
			1		3.15	0.06		13.1	
		1			50.35	0.91		210	
	1		7.63	216.4	24.02	0.42		100	
Cod, salt, A. P.				1	0.190	0.004		0.80	
			1		5.39	0.11		22.6	
		1			86.18	1.81		361	
	1		4.43	125.6	23.87	0.50		100	
Cod, salt, E. P.				1	0.254	0.003		1.04	
			1		7.20	0.09		29.6	
		1			115.20	1.36		473	
	1		3.38	95.8	24.33	0.29		100	
Cod, steak, A. P.				1	0.170	0.005		0.73	
			1		4.80	0.14		20.6	
		1			77.11	2.27		329	
	1		4.86	137.9	23.44	0.69		100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	a. p.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Consommé, canned				1	0.025		0.004	0.12	
			1		0.71		0.11	3.3	
		1			11.34		1.81	53	
	1		30.4	862.1	21.55		3.45	100	
Corn flour				1	0.071	0.013	0.784	3.54	
			1		2.01	0.37	22.23	100.3	
		1			32.25	5.89	355.62	1604	
	1		0.99	28.3	2.01	0.37	22.17	100	
Cottolene				1		1.000		9.00	
			1			28.35		255.2	
		1				453.60		4082	
	1		0.39	11.1		11.11		100	
Cracker-meal, A. P.				1	0.109	0.060	0.729	3.89	
			1		3.09	1.70	20.67	110.3	
		1			49.44	27.23	330.67	1765	
	1		0.91	25.7	2.80	1.54	18.73	100	
Crackers, Boston, A. P.				1	0.110	0.085	0.711	4.05	
			1		3.12	2.41	20.16	114.8	
		1			49.90	38.56	322.50	1837	
	1		0.87	24.7	2.72	2.10	19.04	100	
Crackers, butter, A. P.				1	0.096	0.101	0.716	4.16	
			1		2.72	2.86	20.30	117.8	
		1			43.54	45.81	324.77	1885	
	1		0.85	24.1	2.31	2.43	17.23	100	
Crackers, cream, A. P.				1	0.097	0.121	0.697	4.27	
			1		2.75	3.43	19.76	120.9	
		1			44.00	54.88	316.18	1935	
	1		0.83	23.5	2.28	2.84	16.34	100	
Crackers, water, A. P.				1	0.117	0.050	0.757	3.95	
			1		3.32	1.41	21.46	111.9	
		1			53.07	22.68	343.37	1790	
	1		0.89	25.3	2.96	1.26	19.18	100	
Cream, common, (18.5%)				1	0.025	0.185	0.045	1.95	
			1		0.71	5.24	1.27	55.0	
		1			11.34	83.85	20.41	881	
	1		1.81	51.4	1.28	9.50	2.31	100	
Cucumber pickles, A. P.				1	0.005	0.003	0.027	0.16	
			1		0.14	0.09	0.77	4.4	
		1			2.27	1.36	12.25	70	
	1		22.76	645.2	3.23	1.94	17.42	100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Doughnuts, A. P.				1	0.067	0.210	0.531	4.28	
			1		1.89	5.95	15.05	129.4	
		1			30.39	95.25	240.83	1942	
	1		0.82	23.4	1.56	4.91	12.40	100	
Eels, dressed, A. P.				1	0.148	0.072		1.24	
			1		4.18	2.04		35.2	
		1			67.13	32.66		562	
	1		2.85	80.6	11.94	5.81		100	
Eels, dressed, E. P.				1	0.186	0.091		1.56	
			1		5.27	2.58		44.3	
		1			84.36	41.27		709	
	1		2.26	64.0	11.90	5.82		100	
Egg plant, E. P.				1	0.012	0.003	0.051	0.28	
			1		0.34	0.09	1.44	7.9	
		1			5.44	1.36	23.11	127	
	1		12.64	358.4	4.30	1.08	18.28	100	
Fig bars or biscuits, A. P.				1	0.046	0.066	0.698	3.57	
			1		1.30	1.87	19.79	101.2	
		1			20.86	29.92	316.61	1619	
	1		0.99	28.0	1.29	1.85	19.55	100	
Filberts, A. P.				1	0.075	0.313	0.062	3.37	
			1		2.13	8.87	1.76	95.4	
		1			34.04	141.98	28.12	1526	
	1		1.05	29.7	2.23	9.30	1.84	100	
Filberts, E. P.				1	0.156	0.653	0.130	7.02	
			1		4.42	18.51	3.69	199.1	
		1			70.76	296.20	58.97	3185	
	1		0.50	14.2	2.22	9.30	1.85	100	
Flounder, entrails removed, A. P.				1	0.064	0.003		0.28	
			1		1.81	0.09		8.0	
		1			29.03	1.36		128	
	1		12.45	353.4	22.61	1.06		100	
Fowl, A. P.				1	0.137	0.123		1.66	
			1		3.88	3.49		46.9	
		1			62.14	55.79		751	
	1		2.13	60.4	8.27	7.43		100	
Fowl, E. P.				1	0.193	0.163		2.24	
			1		5.47	4.60		63.5	
		1			87.54	73.94		1016	
	1		1.58	44.7	8.62	7.28		100	

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight			Protein. Grams	Fat, Grams	Carbo-hydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Frog's legs, A. P.				1	0.105	0.001		0.43	
			1		2.98	0.03		12.2	
		1			47.63	0.45		195	
	1		8.12	233.1	24.48	0.23		100	
Frog's legs, E. P.				1	0.155	0.002		0.64	
			1		4.39	0.06		18.1	
		1			70.30	0.91		289	
	1		5.53	156.7	24.30	0.31		100	
Ginger, crystallized				1	0.003	0.002	0.861	3.48	
			1		0.10	0.05	24.42	98.5	
		1			1.54	0.82	390.60	1576	
	1		1.02	28.8	0.10	0.05	24.78	100	
Gingersnaps				1	0.065	0.086	0.760	4.07	
			1		1.84	2.44	21.55	115.5	
		1			29.48	39.00	344.65	1848	
	1		0.86	24.5	1.60	2.11	18.60	100	
Gluten flour				1	0.142	0.018	0.711	3.57	
			1		4.03	0.51	20.16	101.3	
		1			64.41	8.16	322.50	1621	
	1		0.99	28.0	3.97	0.50	19.90	100	
Goose, young, A. P.				1	0.134	0.298		3.22	
			1		3.80	8.45		91.2	
		1			60.78	135.18		1460	
	1		1.10	31.1	4.16	9.26		100	
Goose, young, E. P.				1	0.163	0.362		3.91	
			1		4.62	10.26		110.8	
		1			73.93	164.20		1774	
	1		0.90	25.6	4.17	9.26		100	
Greens, dandelion, A. P.				1	0.024	0.010	0.106	0.61	
			1		0.68	0.28	3.00	17.3	
		1			10.88	4.54	48.08	277	
	1		5.78	163.9	3.93	1.64	17.38	100	
Grape juice				1			0.250	1.00	
			1				7.09	28.4	
		1					113.40		
	1		3.53	100			25.00	100	
Haddock, entrails removed, A. P.				1	0.084	0.002		0.35	
			1		2.37	0.06		10.0	
		1			38.10	0.91		161	
	1		9.96	282.5	23.73	0.57		100	

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight lbs.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
Haddock, entrails removed, E. P.				1	0.172	0.003		0.72	
			1		4.88	0.09		20.3	
		1			78.02	1.36		324	
	1		4.94	139.9	24.06	0.42		100	
Haddock, smoked, A. P.				1	0.158	0.001		0.64	
			1		4.48	0.03		18.2	
		1			71.67	0.45		291	
	1		5.50	156.0	24.65	0.16		100	
Haddock, smoked, E. P.				1	0.233	0.002		0.95	
			1		6.61	0.06		26.9	
		1			105.69	0.91		431	
	1		3.71	105.3	24.53	0.21		100	
Halibut, smoked, A. P.				1	0.193	0.140		2.03	
			1		5.47	3.97		57.6	
		1			87.54	63.50		922	
	1		1.74	49.2	9.50	6.89		100	
Halibut, smoked, E. P.				1	0.207	0.150		2.18	
			1		5.87	4.25		61.7	
		1			93.89	68.04		988	
	1		1.62	45.9	9.50	6.89		100	
Halibut, steak, A. P.				1	0.153	0.044		1.01	
			1		4.33	1.25		28.6	
		1			69.40	19.96		457	
	1		3.49	99.2	15.18	4.37		100	
Halibut, steak, E. P.				1	0.186	0.052		1.21	
			1		5.27	1.47		34.4	
		1			84.36	23.58		550	
	1		2.93	82.5	15.34	4.29		100	
Ham, boneless, A. P.				1	0.143	0.275		3.05	
			1		4.05	7.80		86.4	
		1			64.84	124.74		1382	
	1		1.16	32.8	4.69	9.03		100	
Ham, deviled				1	0.190	0.341		3.83	
			1		5.39	9.67		108.5	
		1			86.18	154.68		1737	
	1		0.92	26.1	4.96	8.91		100	
Ham, fresh, lean, A. P.				1	0.248	0.142		2.27	
			1		7.03	4.03		64.4	
		1			112.50	64.41		1030	
	1		1.55	44.1	10.93	6.26		100	

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Ham, fresh, medium fat, A. P.				1	0.135	0.259		2.87	
			1		3.83	7.34		81.4	
		1			60.33	117.48		1302	
	1		1.23	34.8	4.70	9.02		100	
Ham, fresh, medium fat, E. P.				1	0.153	0.289		3.21	
			1		4.34	8.19		91.1	
		1			69.40	131.10		1457	
	1		1.10	31.1	4.76	9.00		100	
Ham, smoked, lean, A. P.				1	0.175	0.185		2.37	
			1		4.96	5.26		67.05	
		1			79.38	83.92		1073	
	1		1.49	42.3	7.40	7.82		100	
Ham, smoked, lean, E. P.				1	0.198	0.208		2.66	
			1		5.61	5.90		75.5	
		1			89.82	94.35		1207	
	1		1.32	37.5	7.43	7.81		100	
Ham, smoked, medium fat, A. P.				1	0.142	0.334		3.57	
			1		4.03	9.47		101.3	
		1			64.41	151.50		1621	
	1		0.98	28.0	3.97	9.35		100	
Ham, smoked, medium fat, E. P.				1	0.163	0.388		4.14	
			1		4.62	11.00		117.5	
		1			73.94	175.80		1880	
	1		0.85	24.1	3.93	9.36		100	
Head cheese, A. P.				1	0.189	0.240		2.92	
			1		5.36	6.84		82.7	
		1			85.73	108.87		1323	
	1		1.21	34.3	6.48	8.23		100	
Head cheese, E. P.				1	0.195	0.338		3.82	
			1		5.53	9.58		108.3	
		1			88.45	153.30		1734	
	1		0.92	26.2	5.10	8.84		100	
Herring, smoked, A. P.				1	0.205	0.088		1.61	
			1		5.81	2.49		45.7	
		1			92.98	39.95		731	
	1		2.19	62.0	12.72	5.46		100	
Herring, smoked, E. P.				1	0.369	0.158		2.90	
			1		10.46	4.48		82.2	
		1			167.37	71.67		1315	
	1		1.22	34.5	12.73	5.45		100	

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TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Herring, whole, A. P.				1	0.112	0.039		0.80	
			1		3.18	1.11		22.6	
		1			50.80	17.69		362	
	1		4.29	125.1	14.02	4.88		100	
Herring, whole, E. P.				1	0.195	0.071		1.42	
			1		5.53	2.01		40.2	
		1			88.45	32.20		644	
	1		2.49	70.5	13.74	5.00		100	
Hickory nuts, A. P.				1	0.058	0.255	0.043	2.70	
			1		1.64	7.23	1.22	76.5	
		1			26.31	115.67	19.51	1224	
	1		1.31	37.1	2.15	9.44	1.59	100	
Hickory nuts, E. P.				1	0.154	0.674	0.114	7.14	
			1		4.36	19.11	3.23	202.4	
		1			69.86	305.72	51.70	3238	
	1		0.49	14.0	2.16	9.44	1.59	100	
Honey, A. P.				1	0.004		0.812	3.26	
			1		0.11		23.02	92.5	
		1			1.81		368.30	1480	
	1		1.08	30.6	0.12		24.88	100	
Koumiss, A. P.				1	0.028	0.021	0.054	0.52	
			1		0.79	0.60	1.53	14.7	
		1			12.70	9.53	24.49	235	
	1		6.82	193.4	5.42	4.06	10.44	100	
Lamb, breast, A. P.				1	0.154	0.191		2.34	
			1		4.37	5.41		66.6	
		1			69.85	86.63		1057	
	1		1.51	42.8	6.59	8.18		100	
Lamb, breast, E. P.				1	0.191	0.236		2.89	
			1		5.41	6.69		81.8	
		1			86.63	107.04		1310	
	1		1.22	34.6	6.61	8.17		100	
Lamb, leg, hind, medium fat, A. P.				1	0.159	0.136		1.86	
			1		4.51	3.86		52.7	
		1			72.12	61.69		844	
	1		1.90	53.8	8.55	7.31		100	
Lamb, leg, hind, medium fat, E. P.				1	0.192	0.165		2.25	
			1		5.44	4.68		63.9	
		1			87.08	74.84		1022	
	1		1.57	44.4	8.52	7.32		100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight lbs.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
Lamb, loin, A. P.				1	0.160	0.241		2.81	
			1		4.54	6.83		79.6	
		1			72.58	109.30		1274	
	1		1.26	35.6	5.70	8.58		100	
Lamb, loin, E. P.				1	0.187	0.283		3.30	
			1		5.30	8.02		93.42	
		1			84.82	128.37		1495	
	1		1.06	30.4	5.67	8.59		100	
Lamb, neck, A. P.				1	0.146	0.204		2.42	
			1		4.14	5.78		68.6	
		1			66.22	92.53		1098	
	1		1.46	41.3	6.03	8.43		100	
Lamb, neck, E. P.				1	0.177	0.248		2.94	
			1		5.02	7.03		83.3	
		1			80.28	112.49		1334	
	1		1.20	34.0	6.02	8.43		100	
Lamb, shoulder, A. P.				1	0.144	0.236		2.70	
			1		4.08	6.69		76.5	
		1			65.31	107.05		1225	
	1		1.31	37.0	5.33	8.74		100	
Lamb, shoulder, E. P.				1	0.181	0.297		3.40	
			1		5.13	8.42		112.5	
		1			82.10	134.70		1541	
	1		1.04	29.4	5.33	8.74		100	
Lamb, tongue, canned, A. P.				1	0.135	0.173		2.10	
			1		3.83	4.91		59.4	
		1			61.24	78.47		951	
	1		1.68	47.7	6.44	8.25		100	
Lemons, A. P.				1	0.007	0.005	0.059	0.31	
			1		0.20	0.14	1.67	8.8	
		1			3.18	2.27	26.76	140	
	1		11.41	323.6	2.27	1.62	19.09	100	
Lemons, E. P.				1	0.01	0.007	0.085	0.44	
			1		0.28	0.20	2.41	12.6	
		1			4.54	3.18	38.56	201	
	1		7.96	225.7	2.26	1.58	19.24	100	
Lobster, canned, A. P.				1	0.181	0.011	0.005	0.84	
			1		5.13	0.31	0.14	23.9	
		1			82.10	4.99	2.27	382	
	1		4.30	118.6	21.47	1.31	0.59	100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Lobster,				1	0.059	0.007	0.002	0.31	
whole,			1		1.67	0.20	0.06	8.70	
A. P.		1			26.76	3.18	0.91	139	
	1		11.48	325.7	19.22	2.29	0.65	100	
Lobster,				1	0.164	0.018	0.004	0.83	
whole,			1		4.65	0.51	0.11	23.6	
E. P.		1			74.38	8.16	1.81	378	
	1		4.23	119.9	19.66	2.16	0.48	100	
Macaroons,				1	0.065	0.152	0.652	4.24	
A. P.			1		1.84	4.31	18.48	120.1	
		1			29.48	68.95	295.75	1921	
	1		0.83	23.6	1.54	3.59	15.39	100	
Mackerel,				1	0.102	0.042		0.79	
fresh,			1		2.89	1.19		22.3	
whole,		1			46.27	19.05		357	
A. P.	1		4.49	127.2	12.98	5.34		100	
Mackerel,				1	0.187	0.071		1.39	
fresh,			1		5.30	2.01		39.3	
whole,		1			84.82	32.20		629	
E. P.	1		2.54	72.1	13.48	5.12		100	
Mackerel,				1	0.116	0.035		0.78	
fresh,			1		3.29	0.99		22.1	
entrails re-		1			52.62	15.87		353	
moved, A.P.	1		4.51	128.4	14.89	4.49		100	
Mackerel,				1	0.196	0.087		1.57	
salt,			1		5.56	2.47		44.4	
canned,		1			88.89	39.47		711	
A. P.	1		2.25	63.8	12.51	5.55		100	
Mackerel,				1	0.139	0.212		2.46	
salt,			1		3.94	6.01		69.9	
dressed,		1			63.05	96.16		1118	
A. P.	1		1.43	40.6	5.64	8.60		100	
Mackerel,				1	0.173	0.264		3.07	
salt,			1		4.91	7.48		87.0	
dressed,		1			78.47	119.74		1392	
E. P.	1		1.15	32.6	5.64	8.61		100	
Mushrooms,				1	0.035	0.004	0.068	0.45	
A. P.			1		0.99	0.11	1.93	12.7	
		1			15.88	1.81	30.85	203	
	1		7.86	223.2	7.81	0.89	15.18	100	

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Mutton, chuck, A. P.				1	0.117	0.300		3.17	
			1		3.32	8.50		89.8	
		1			53.07	136.08		1437	
	1		1.11	31.6	3.69	9.47		100	
Mutton, chuck, E. P.				1	0.146	0.368		3.90	
			1		4.14	10.43		110.4	
		1			66.22	166.80		1767	
	1		0.91	25.7	3.75	9.45		100	
Mutton, flank, medium fat, A. P.				1	0.138	0.369		3.87	
			1		3.91	10.46		109.8	
		1			62.60	167.38		1757	
	1		0.91	25.8	3.56	9.53		100	
Mutton, flank, medium fat, E. P.				1	0.152	0.383		4.06	
			1		4.31	10.86		115.0	
		1			68.94	173.70		1839	
	1		0.87	24.7	3.75	9.44		100	
Mutton, leg, hind, lean, A. P.				1	0.165	0.103		1.59	
			1		4.68	2.92		45.0	
		1			74.84	46.72		720	
	1		2.22	63.0	10.40	6.49		100	
Mutton, leg, hind, lean, E. P.				1	0.198	0.124		1.91	
			1		5.62	3.52		54.1	
		1			89.82	56.24		865	
	1		1.85	52.4	10.38	6.50		100	
Mutton, leg, hind, medium fat, A. P.				1	0.151	0.147		1.93	
			1		4.28	4.17		54.6	
		1			68.50	66.68		874	
	1		1.83	51.9	7.84	7.63		100	
Mutton, leg, hind, medium fat, E. P.				1	0.185	0.180		2.36	
			1		5.24	5.10		66.9	
		1			83.91	81.64		1070	
	1		1.50	42.4	7.84	7.63		100	
Mutton, loin, free fat removed				1	0.237	0.185		2.61	
			1		6.72	5.25		74.1	
		1			107.50	84.12		1185	
	1		1.35	38.3	9.07	7.08		100	
Mutton, loin, medium fat, A. P.				1	0.135	0.283		3.09	
			1		3.83	8.02		87.5	
		1			61.24	128.36		1400	
	1		1.14	32.4	4.37	9.17		100	

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Mutton, loin, medium fat, E. P.				1	0.160	0.331		3.62	
			1		4.55	9.38		102.6	
		1			72.58	150.14		1642	
	1		0.97	27.6	4.42	9.15		100	
Mutton, neck, medium fat, A. P.				1	0.123	0.179		2.10	
			1		3.49	5.07		59.6	
		1			55.80	81.20		954	
	1		1.68	47.6	5.85	8.51		100	
Mutton, neck, medium fat, E. P.				1	0.169	0.246		2.89	
			1		4.79	6.97		81.9	
		1			76.66	111.58		1311	
	1		1.22	34.6	5.85	8.51		100	
Mutton, shoulder, medium fat, A. P.				1	0.137	0.155		1.94	
			1		3.88	4.39		55.1	
		1			62.14	70.31		881	
	1		1.82	51.5	7.05	7.96		100	
Mutton, shoulder, medium fat, E. P.				1	0.177	0.199		2.50	
			1		5.02	5.64		70.8	
		1			80.28	90.26		1133	
	1		1.41	40.0	7.08	7.96		100	
Nectarines, A. P.				1	0.006		0.148	0.62	
			1		0.17		4.20	17.5	
		1			2.72		67.12	279	
	1		5.71	162.3	0.97		24.02	100	
Nectarines, E. P.				1	0.006		0.159	0.66	
			1		0.17		4.51	18.7	
		1			2.72		72.12	299	
	1		5.34	151.5	0.91		24.09	100	
Oatmeal				1	0.161	0.072	0.675	3.99	
			1		4.56	2.04	19.13	113.2	
		1			73.02	32.65	306.18	1810	
	1		0.88	25.1	4.03	1.80	16.90	100	
Okra, A. P.				1	0.014	0.002	0.065	0.33	
			1		0.40	0.06	1.84	9.5	
		1			6.35	0.91	29.48	152	
	1		10.54	299.4	4.19	0.60	19.46	100	
Oleomargarine, A. P.				1	0.012	0.830		7.52	
			1		0.34	23.53		213.1	
		1			5.44	376.50		3410	
	1		0.47	13.3	0.16	11.04		100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbo-hydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Olives, ripe, A. P.				1	0.014	0.210	0.035	2.09	
			1		0.40	5.95	0.99	59.1	
		1			6.35	95.25	15.88	946	
	1		1.69	47.9	0.67	10.02	1.68	100	
Olives, ripe, E. P.				1	0.017	0.250	0.043	2.49	
			1		0.48	7.09	1.22	70.6	
		1			7.71	113.40	19.50	1129	
	1		1.42	40.2	0.68	10.04	1.73	100	
Orange juice				1			0.108	0.43	
			1				3.06	12.25	
		1					48.98	196	
	1		8.17	231.5			25.00	100	
Oysters, canned, A. P.				1	0.088	0.024	0.039	0.72	
			1		2.50	0.68	1.11	20.5	
		1			39.92	10.89	15.38	328	
	1		4.87	138.1	12.16	3.32	5.39	100	
Pecans, unpolished, A. P.				1	0.051	0.379	0.082	3.94	
			1		1.45	10.74	2.32	111.8	
		1			23.13	171.90	37.19	1788	
	1		0.89	25.4	1.29	9.61	2.08	100	
Pecans, unpolished, E. P.				1	0.096	0.705	0.153	7.34	
			1		2.72	19.99	4.33	208.1	
		1			43.55	319.79	69.40	3330	
	1		0.48	13.6	1.31	9.62	2.08	100	
Perch, yellow dressed, A. P.				1	0.128	0.007		0.58	
			1		3.63	0.20		16.3	
		1			58.06	3.18		261	
	1		6.32	173.9	22.26	1.22		100	
Pickerel, pike, entrails removed, A. P.				1	0.107	0.003		0.46	
			1		3.03	0.09		12.9	
		1			48.54	1.36		206	
	1		7.75	219.8	23.52	0.66		100	
Pigs' feet, pickled, A. P.				1	0.102	0.093		1.25	
			1		2.90	2.64		35.3	
		1			46.27	42.18		565	
	1		2.83	80.3	8.20	7.50		100	
Pigs' feet, pickled, E. P.				1	0.163	0.148		1.98	
			1		4.60	4.20		56.2	
		1			73.94	67.13		900	
	1		1.78	50.9	8.20	7.50		100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbo-hydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Pineapple juice				1			0.165	0.66	
			1				4.68	18.7	
		1					74.84	299	
	1		5.34	151.5			25.00	100	
Pine nuts, pignolias, E. P.				1	0.339	0.494	0.069	6.08	
			1		9.61	14.00	1.96	172.3	
		1			153.77	224.10	31.30	2757	
	1		0.58	16.5	5.58	8.13	1.14	100	
Pistachios, shelled, E. P.				1	0.223	0.540	0.163	6.40	
			1		6.32	15.31	4.62	181.6	
		1			101.14	244.93	73.94	2905	
	1		0.55	15.6	3.48	8.43	2.55	100	
Pop corn				1	0.107	0.050	0.787	4.03	
			1		3.03	1.42	22.31	114.1	
		1			48.54	22.68	356.98	1826	
	1		0.87	24.8	2.66	1.24	19.55	100	
Porgy, whole, A. P.				1	0.074	0.021		0.49	
			1		2.10	0.60		13.8	
		1			33.57	9.52		220	
	1		7.27	206.2	15.26	4.33		100	
Porgy, whole, E. P.				1	0.186	0.051		1.20	
			1		5.27	1.45		34.1	
		1			84.36	23.13		546	
	1		2.93	83.1	15.46	4.24		100	
Pork, loin chops, lean, A. P.				1	0.155	0.145		1.93	
			1		4.39	4.11		54.6	
		1			70.31	65.76		873	
	1		1.83	51.9	8.05	7.53		100	
Pork, loin chops, lean, E. P.				1	0.203	0.190		2.52	
			1		5.76	5.39		71.5	
		1			92.08	86.18		1144	
	1		1.40	39.7	8.05	7.53		100	
Pork, loin chops, medium fat, A. P.				1	0.134	0.242		2.71	
			1		3.80	6.86		76.9	
		1			60.78	109.78		1231	
	1		1.30	36.9	4.94	8.92		100	
Pork, loin chops, medium fat, E. P.				1	0.166	0.301		3.37	
			1		4.71	8.53		95.6	
		1			75.30	136.53		1530	
	1		1.04	29.7	4.92	8.92		100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Pork, salt, clear fat, A. P.				1	0.019	0.862		7.83	
			1		0.54	24.44		222.1	
		1			8.62	391.00		3555	
	1		0.45	12.8	0.24	11.00		100	
Pork, side not including lard and kidney, A.P.				1	0.080	0.490		4.73	
			1		2.27	13.89		134.1	
		1			36.28	222.25		2145	
	1		0.74	21.1	1.69	10.36		100	
Pork, side not including lard and kidney, E.P.				1	0.091	0.553		5.34	
			1		2.58	15.68		151.4	
		1			41.28	250.82		2423	
	1		0.66	18.7	1.70	10.34		100	
Pork, shoulder smoked, medium fat, A. P.				1	0.130	0.266		2.91	
			1		3.69	7.54		82.6	
		1			58.98	120.66		1322	
	1		1.21	34.3	4.46	9.13		100	
Pork, shoulder smoked, medium fat, E. P.				1	0.159	0.325		3.56	
			1		4.51	9.21		100.9	
		1			72.12	147.42		1615	
	1		0.99	28.1	4.47	9.13		100	
Pork, tenderloin, A. P.				1	0.189	0.130		1.93	
			1		5.36	3.69		54.6	
		1			85.74	58.97		874	
	1		1.83	51.9	9.81	6.75		100	
Pumpkins, A. P.				1	0.005	0.001	0.026	0.13	
			1		0.14	0.03	0.74	3.8	
		1			2.27	0.45	11.79	60	
	1		26.52	751.9	3.76	0.75	19.55	100	
Pumpkins, E. P.				1	0.010	0.001	0.052	0.26	
			1		0.28	0.03	1.47	7.3	
		1			4.54	0.45	23.59	117	
	1		13.72	389.1	3.89	0.39	20.23	100	
Raspberry juice				1			0.094	0.38	
			1				2.66	10.7	
		1					42.64	171	
	1		9.38	266			25.00	100	
Rice flour				1	0.086	0.061	0.680	3.61	
			1		2.43	1.72	19.28	102.4	
		1			39.01	27.67	308.45	1639	
	1		0.97	27.6	2.38	1.68	18.82	100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Rolls, French				1	0.085	0.025	0.557	2.79	
			1		2.41	0.71	15.79	79.2	
		1			38.56	11.34	252.55	1267	
	1		1.26	35.8	3.04	0.90	19.94	100	
Rolls, Vienna				1	0.085	0.022	0.565	2.80	
			1		2.41	0.62	16.03	79.4	
		1			38.56	9.98	256.28	1269	
	1		1.26	35.7	3.04	0.79	20.19	100	
Rolls, water				1	0.090	0.030	0.542	2.80	
			1		2.55	0.85	15.37	79.3	
		1			40.82	13.61	245.82	1269	
	1		1.26	35.7	3.22	1.07	19.37	100	
Rutabagas, A. P.				1	0.009	0.001	0.060	0.29	
			1		0.26	0.03	1.70	8.1	
		1			4.08	0.45	27.22	129	
	1		12.37	350.9	3.16	0.35	21.06	100	
Rye flour				1	0.068	0.009	0.787	3.50	
			1		1.93	0.26	22.31	99.3	
		1			30.88	4.08	357.00	1588	
	1		1.01	28.5	1.94	0.26	22.48	100	
Salmon, whole, fresh, A. P.				1	0.153	0.089		1.41	
			1		4.34	2.52		40.1	
		1			69.40	40.37		641	
	1		2.50	70.8	10.83	6.30		100	
Salmon, whole, fresh, E. P.				1	0.220	0.128		2.03	
			1		6.24	3.63		57.6	
		1			99.80	58.06		922	
	1		1.75	49.2	10.83	6.30		100	
Sausage, bologna, A. P.				1	0.182	0.197		2.50	
			1		5.16	5.59		70.9	
		1			82.56	89.36		1134	
	1		1.41	40.0	7.28	7.88		100	
Sausage, bologna, E. P.				1	0.187	0.176	0.003	2.34	
			1		5.30	4.99	0.09	61.5	
		1			84.82	79.83	1.36	1063	
	1		1.50	42.7	7.98	7.51	0.13	100	
Sausage, frankfort, A. P.				1	0.196	0.186	0.011	2.50	
			1		5.56	5.27	0.31	70.9	
		1			88.90	84.37	4.99	1134	
	1		1.12	40.0	7.83	7.43	0.44	100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Sausage meat, pork, A. P.				1	0.174	0.325		3.62	
			1		4.93	9.21		102.4	
		1			78.93	147.41		1642	
	1		0.98	27.7	4.82	9.00		100	
Sausage, pork, A. P.				1	0.130	0.440	0.011	4.52	
			1		3.69	12.47	0.31	128.3	
		1			58.97	199.60	4.99	2052	
	1		0.78	22.1	2.86	9.73	0.24	100	
Sausage, summer, A. P.				1	0.245	0.421		4.77	
			1		6.95	11.94		135.2	
		1			111.13	190.98		2163	
	1		0.74	21.0	5.14	8.83		100	
Sausage, summer, E. P.				1	0.260	0.445		5.05	
			1		7.37	12.62		143.0	
		1			117.93	201.86		2289	
	1		0.70	19.8	5.15	8.82		100	
Scallops, A. P.				1	0.148	0.001	0.034	0.74	
			1		4.20	0.03	0.96	20.9	
		1			67.13	0.45	15.42	334	
	1		4.79	135.7	20.08	0.14	4.61	100	
Shad, whole, fresh, A. P.				1	0.094	0.048		0.81	
			1		2.67	1.36		22.9	
		1			42.64	21.77		367	
	1		4.37	123.8	11.63	5.94		100	
Shad, whole, fresh, E. P.				1	0.188	0.095		1.61	
			1		5.33	2.69		45.6	
		1			85.12	43.04		728	
	1		2.19	62.2	11.70	5.91		100	
Shad roe, fresh, A. P.				1	0.209	0.038	0.026	1.28	
			1		5.93	1.08	0.74	36.3	
		1			94.72	17.12	11.79	581	
	1		2.75	78.0	16.30	2.96	2.03	100	
Shrimp, canned, A. P.				1	0.254	0.010	0.002	1.11	
			1		7.20	0.28	0.06	31.5	
		1			115.20	4.53	1.81	504	
	1		3.17	89.8	22.71	0.90	0.18	100	
Smelt, whole, A. P.				1	0.101	0.010		0.49	
			1		2.86	0.28		14.0	
		1			45.83	4.53		224	
	1		7.14	202.4	20.44	2.02		100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Smelt, whole, E. P.				1	0.176	0.018		0.87	
			1		4.99	0.51		24.6	
		1			79.63	8.16		393	
	1		4.07	115.5	20.33	2.08		100	
Squash, fresh, E. P.				1	0.014	0.005	0.090	0.46	
			1		0.40	0.14	2.55	13.1	
		1			6.35	2.27	40.82	209	
	1		7.65	216.9	3.04	1.09	19.52	100	
Strawberry juice				1			0.050	0.20	
			1				1.42	5.7	
		1					22.68	91	
	1		17.6	500			25.00	100	
Sturgeon, anterior sections, A. P.				1	0.151	0.016		0.75	
			1		4.28	0.45		21.2	
		1			68.50	7.26		339	
	1		4.72	133.7	20.19	2.14		100	
Sturgeon, anterior sections, E. P.				1	0.181	0.019		0.90	
			1		5.13	0.54		25.4	
		1			82.10	8.62		406	
	1		3.94	111.7	20.22	2.12		100	
Sugar, brown				1			0.950	3.80	
			1				26.93	107.7	
		1					430.92	1724	
	1		0.93	26.3			25.00	100	
Sugar, maple				1			0.828	3.31	
			1				23.47	93.8	
		1					375.58	1502	
	1		1.07	30.2			25.00	100	
Syrup, maple, A. P.				1			0.714	2.86	
			1				20.24	81.0	
		1					323.88	1295	
	1		1.23	35.0			25.00	100	
Terrapin, A. P.				1	0.052	0.009		0.29	
			1		1.47	0.26		8.2	
		1			23.57	4.08		131	
	1		12.20	346.0	17.99	3.11		100	
Terrapin, E. P.				1	0.212	0.035		1.16	
			1		6.01	0.99		33.0	
		1			96.16	15.88		528	
	1		3.03	86.0	18.23	3.01		100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Tripe, A. P.				1	0.117	0.012		0.58	
			1		3.32	0.34		16.3	
		1			53.07	5.44		261	
	1		6.12	173.6	20.31	2.08		100	
Trout, salmon or lake, fresh, A. P.				1	0.091	0.051		0.82	
			1		2.58	1.45		23.3	
		1			41.28	23.13		373	
	1		4.29	121.5	11.06	6.20		100	
Trout, salmon or lake, fresh, E. P.				1	0.178	0.103		1.64	
			1		5.05	2.92		46.5	
		1			80.64	46.72		743	
	1		2.15	61.0	10.86	6.28		100	
Turkey, A. P.				1	0.161	0.184		2.30	
			1		4.56	5.22		65.2	
		1			73.03	83.46		1043	
	1		1.53	43.5	7.00	8.00		100	
Turkey, E. P.				1	0.211	0.229		2.91	
			1		5.98	6.49		82.4	
		1			95.71	103.88		1318	
	1		1.21	34.4	7.26	7.88		100	
Turtle, green, whole, A. P.				1	0.047	0.001		0.20	
			1		1.33	0.03		5.6	
		1			21.32	0.45		89	
	1		17.90	507.6	23.86	0.51		100	
Turtle, green, whole, E. P.				1	0.198	0.005		0.84	
			1		5.61	0.14		23.7	
		1			89.81	2.27		380	
	1		4.21	119.4	23.66	0.60		100	
Vanilla wafers				1	0.066	0.140	0.716	4.39	
			1		1.87	3.97	20.30	124.4	
		1			29.94	63.50	324.75	1990	
	1		0.80	22.8	1.50	3.19	16.31	100	
Veal, breast, lean, A. P.				1	0.157	0.062		1.19	
			1		4.45	1.76		33.6	
		1			71.05	28.14		538	
	1		2.97	84.3	13.24	5.23		100	
Veal, breast, lean, E. P.				1	0.212	0.080		1.57	
			1		6.01	2.27		44.5	
		1			96.16	36.29		711	
	1		2.25	63.8	13.52	5.10		100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Veal, breast, medium fat, A. P.				1	0.156	0.110		1.61	
			1		4.42	3.12		45.8	
		1			70.76	49.90		732	
	1		2.19	62.0	9.67	6.82		100	
Veal, breast, medium fat, E. P.				1	0.194	0.138		2.02	
			1		5.50	3.91		57.2	
		1			88.00	62.59		915	
	1		1.75	49.6	9.61	6.84		100	
Veal, chuck, lean, A. P.				1	0.167	0.016		0.81	
			1		4.74	0.45		23.0	
		1			75.75	7.26		368	
	1		4.34	123.1	20.57	1.97		100	
Veal, chuck, lean, E. P.				1	0.206	0.019		1.00	
			1		5.84	0.54		28.2	
		1			93.44	8.62		451	
	1		3.54	100.5	20.70	1.90		100	
Veal, chuck, medium fat, E. P.				1	0.197	0.065		1.37	
			1		5.58	1.84		38.9	
		1			89.36	29.48		623	
	1		2.57	72.8	14.35	4.73		100	
Veal, chuck, medium fat, A. P.				1	0.160	0.052		1.11	
			1		4.54	1.47		31.4	
		1			72.58	23.59		503	
	1		3.18	90.3	14.44	4.69		100	
Veal, flank, medium fat, A. P.				1	0.205	0.104		1.76	
			1		5.81	2.94		49.8	
		1			92.96	47.04		797	
	1		2.01	56.9	11.65	5.92		100	
Veal, kidney, A. P.				1	0.169	0.064		1.25	
			1		4.79	1.81		35.5	
		1			76.64	28.96		568	
	1		2.82	79.9	13.50	5.11		100	
Veal, leg, lean, A. P.				1	0.194	0.037		1.11	
			1		5.50	1.05		31.4	
		1			88.00	16.83		503	
	1		3.18	90.2	17.49	3.34		100	
Veal, leg, lean, E. P.				1	0.213	0.041		1.22	
			1		6.04	1.16		34.6	
		1			96.64	18.56		554	
	1		2.89	81.9	17.45	3.36		100	

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Veal, leg, medium fat, A. P.				1	0.155	0.079		1.33	
			1		4.39	2.24		37.7	
		1			70.24	35.84		603	
	1		2.65	75.1	11.64	5.93		100	
Veal, leg, medium fat, E. P.				1	0.202	0.090		1.62	
			1		5.73	2.55		45.9	
		1			91.68	40.80		734	
	1		2.18	61.8	12.48	5.56		100	
Veal, liver, A. P.				1	0.190	0.053		1.24	
			1		5.39	1.50		35.1	
		1			86.24	24.04		562	
	1		2.85	80.8	15.36	4.28		100	
Veal, loin, lean, A. P.				1	0.159	0.044		1.03	
			1		4.51	1.25		29.3	
		1			72.12	19.96		468	
	1		3.42	96.9	15.41	4.26		100	
Veal, loin, lean, E. P.				1	0.204	0.056		1.32	
			1		5.78	1.59		37.4	
		1			92.53	25.40		599	
	1		2.67	75.8	15.46	4.25		100	
Veal, loin, medium fat, A. P.				1	0.166	0.090		1.47	
			1		4.71	2.55		41.8	
		1			75.30	40.82		669	
	1		2.39	67.8	11.25	6.10		100	
Veal, loin, medium fat, E. P.				1	0.199	0.108		1.77	
			1		5.64	3.06		50.1	
		1			90.24	48.99		798	
	1		1.99	56.6	11.25	6.11		100	
Veal, neck, A. P.				1	0.139	0.046		0.97	
			1		3.94	1.30		27.5	
		1			63.05	20.87		440	
	1		3.63	103.0	14.33	4.74		100	
Veal, neck, E. P.				1	0.203	0.069		1.43	
			1		5.76	1.96		40.6	
		1			92.07	31.30		650	
	1		2.47	69.9	14.19	4.82		100	
Veal, rib, medium fat, A .P.				1	0.155	0.046		1.03	
			1		4.39	1.30		29.3	
		1			70.30	20.87		469	
	1		3.41	96.7	14.98	4.45		100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbo-hydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Veal, rib, medium fat, E. P.				1	0.207	0.061		1.38	
			1		5.87	1.73		39.0	
		1			93.88	27.67		625	
	1		2.56	72.6	15.03	4.43		100	
Veal, rump, A. P.				1	0.138	0.113		1.57	
			1		3.91	3.20		44.5	
		1			62.60	51.26		712	
	1		2.25	63.7	8.79	7.20		100	
Veal, rump, E. P.				1	0.198	0.162		2.25	
			1		5.61	4.59		63.8	
		1			89.82	73.48		1021	
	1		1.57	44.4	8.79	7.19		100	
Veal, shank, fore, A. P.				1	0.122	0.031		0.77	
			1		3.46	0.88		21.7	
		1			55.34	14.06		347	
	1		4.60	130.4	15.91	4.04		100	
Veal, shank, fore, E. P.				1	0.207	0.052		1.30	
			1		5.87	1.47		36.7	
		1			93.89	23.58		588	
	1		2.72	77.2	15.98	4.01		100	
Veal, shank, hind, medium fat, A. P.				1	0.077	0.017		0.46	
			1		2.18	0.48		13.0	
		1			34.93	7.71		209	
	1		7.65	216.9	16.70	3.68		100	
Veal, shank, hind, medium fat, E. P.				1	0.207	0.046		1.24	
			1		5.87	1.30		35.2	
		1			93.89	20.87		563	
	1		2.84	80.5	16.66	3.70		100	
Veal, shoulder, lean, A. P.				1	0.169	0.039		1.03	
			1		4.79	1.11		29.1	
		1			76.66	17.69		466	
	1		3.43	97.4	16.46	3.79		100	
Veal, shoulder, lean, E. P.				1	0.207	0.046		1.24	
			1		5.86	1.30		35.2	
		1			93.88	20.87		563	
	1		2.84	80.5	16.67	3.70		100	
Veal, shoulder, medium fat, A. P.				1	0.151	0.110		1.59	
			1		4.28	3.12		45.2	
		1			68.48	49.90		723	
	1		2.21	62.7	9.47	6.90		100	

TABLE XIX.

Food Values of Food Materials used Chiefly by Weight in Terms of Standard Units.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Veal, shoulder, medium fat, E. P.				1	0.197	0.144		2.08	
			1		5.58	4.08		59.1	
		1			89.36	65.32		945	
	1		1.69	47.9	9.45	6.91		100	
Walnuts, black, A. P.				1	0.072	0.146	0.030	1.72	
			1		2.04	4.14	0.85	48.8	
		1			32.66	66.22	13.61	781	
	1		2.05	58.1	4.18	8.48	1.74	100	
Walnuts, black, E. P.				1	0.276	0.563	0.117	6.64	
			1		7.82	15.96	3.32	188.2	
		1			125.19	255.38	53.06	3012	
	1		0.53	15.1	4.16	8.48	1.76	100	
Watermelons, fresh, A. P.				1	0.002	0.001	0.027	0.13	
			1		0.06	0.03	0.77	3.5	
		1			0.91	0.45	12.25	57	
	1		28.22	800.0	1.60	0.80	21.60	100	
Watermelons, fresh, E. P.				1	0.004	0.002	0.067	0.30	
			1		0.11	0.06	1.90	8.6	
		1			1.81	0.91	30.38	137	
	1		11.68	331.1	1.32	0.66	22.19	100	
Weakfish, whole, A. P.				1	0.086	0.011		0.44	
			1		2.44	0.32		12.6	
		1			39.01	4.99		201	
	1		7.96	225.7	19.41	2.48		100	
Weakfish, whole, E. P.				1	0.178	0.024		0.93	
			1		5.05	0.68		26.3	
		1			80.74	10.61		421	
	1		3.80	107.8	19.18	2.59		100	
Wheat, cracked and crushed				1	0.111	0.017	0.755	3.62	
			1		3.15	0.48	21.40	102.5	
		1			50.34	7.71	342.50	1641	
	1		0.97	27.6	3.07	0.47	20.87	100	
Wheat, parched and toasted				1	0.136	0.024	0.745	3.74	
			1		3.85	0.68	21.14	106.0	
		1			61.68	10.88	337.80	1696	
	1		0.94	26.7	3.63	0.64	19.89	100	
Whey, A. P.				1	0.010	0.003	0.050	0.27	
			1		0.28	0.09	1.42	7.6	
		1			4.54	1.36	22.68	121	
	1		13.2	374.5	3.74	1.12	18.73	100	

TABLE XIX.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Whitefish, fresh, whole, E. P.				1	0.229	0.065		1.50	
			1		6.49	1.84		42.5	
		1			103.84	29.44		680	
	1		2.35	66.6	15.26	4.33		100	
Yeast, compressed				1	0.117	0.004	0.210	1.34	
			1		3.32	0.11	5.95	38.1	
		1			53.04	1.81	95.25	610	
	1		2.62	74.4	8.70	0.30	15.62	100	

TABLE XX.*

Ash Constituents of Foods in Percentage of the Edible Portion.

(Compiled from various sources.)

Food.	CaO	MgO	K_2O	Na_2O	P_2O_5	Cl	S	Fe
Almonds	.30	.35	.20	.03	.87	.005	.135	.002
Apples	.014	.014	.15	.02	.03	.004	.005	.0003
Apricots	.018	.018	.28	.06	.06	.003		
Asparagus	.04	.02	.20	.01	.09	.04	.04	.0010
Bananas	.01	.04	.50	.02	.055	.20	.013	.0006
Barley, pearled	.025	.10	.35	.04	.46	.02		.0013
whole	.06	.22	.50	.06	.95	.02	.14	.004
Beans, dried	.22	.25	1.40	.26	1.14	.03	.22	.0070
lima, dried	.10	.31	2.1	.33	.77	.025	.16	.0070
lima, fresh	.04	.11	.7	.12	.27	.009	.06	.0025
string	.075	.043	.28	.03	.12		.04	.0016
Beef (*see* Meat)								
Beer	.007	.010	.059	.059	.089	.014		
Beets	.03	.033	.45	.10	.09	.04	.015	.0006
Blackberries	.08	.035	.20		.08		.01	
Blueberries	.045	.015	.05		.02			
Bread, white	.03	.03	.10		.20		.12	.0009
whole wheat	.04	.08	.27		.4			.0015
Breadfruit	.12	.01	.28	.04	.16	.10		
Buckwheat flour	.02	.08	.16	.04	.40	.01		
Butter	.02	.001	.02		.03			
Buttermilk	.15	.026	.18	.08	.22	.10		
Cabbage	.068	.026	.45	.05	.09	.03	.07	.0011
Cocoa	.14	.48	1.0	.05	1.1	.04		.0024
Capers	.17	.04	.25	.07	.14	.27		
Caraway seed	.9	.4	1.3	.3	1.2	.15		
Carrots	.077	.034	.35	.13	.10	.036	.022	.0008
Cauliflower	.17	.02	.27	.10	.14	.05	.085	
Caviar	.19		.13	1.2	.4	1.8		
Celery	.10	.04	.37	.11	.10	.17	.025	.0005
Cheese, hard	1.1	.06	.2	1.	1.45	1.		
Cottage cheese	.3	.015			.5			
Cherries	.03	.027	.26	.03	.07	.01		.0005
Cherry juice	.025	.02	.15	.02	.03	.004	.006	
Chestnuts	.04	.08	.50	.05	.20	.01	.068	.001
Chicory	.05	.03	.27	.11	.09	.06		
Chives	.20	.05	.33	.04	.20	.04		
Chocolate	.14	.48			.90			
Citron	.17	.03	.25	.02	.08	.01		
Cocoanut pulp	.09	.10	.77	.10	.38	.25		
Codfish (*see* Fish)								
Coffee	.25	.42	2.3	.08	.054	.04		
Corn, sweet, dried	.03	.20	.5	.2	.8	.05	.16	.0029
sweet, fresh	.008	.055	.137	.05	.22	.014	.044	.0008
Corn meal	.015	.13	.17	.03	.3		.116	.0011
Crackers, soda	.028	.017	.12		.23		.12	.0015
Cranberries	.024	.011	.09	.013	.03		.008	.0006
Cream	.14	.02	.15	.06	.18	.1	.03	.0002
Cucumbers	.022	.015	.17	.015	.08	.03	.022	

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TABLE XX.

ASH CONSTITUENTS OF FOODS IN PERCENTAGE OF THE EDIBLE PORTION.

Continued.

(Compiled from various sources.)

Food.	CaO	MgO	K_2O	Na_2O	P_2O_5	Cl	S	Fe
Currants, fresh	.05	.04	.25	.02	.10	.01	.01	.0005
Zante	.14	.08	1.0	.1	.3	.06		
Currant juice	.03	.02	.2		.05			
Dandelion greens								.0027
Dates	.10				.12			.003
Eggs	.093	.015	.165	.2	.37	.10	.19	.003
Egg white	.015	.015	.19	.21	.03	.15	.196	.0001
Egg yolk	.2	.02	.13	.1	1.0	.1	.157	.0085
Endive	.14	.02	.45	.15	.10		.03	
Figs, fresh	.074	.036	.365	.016	.082	.014		.0008
dried	.299	.145	1.478	.064	.332	.056		.0032
Fish,[1] cod	.015	.03	.40	.13	.4	.24		.0004
haddock	.03	.04	.40	.13	.4	.24	.22	
halibut	.013				.4			.0003
herring	.08	.05			.55		.23	
herring roe	.012	.06						
pike	.05	.05	.4	.15	.48	.04	.22	
salmon	.011	.05	.32	.17	.42	.28		.0015
Flaxseed	.27	.42	1.04	.06	1.30		.17	
Flour (*see* under wheat, buckwheat, etc.)								
Gooseberries	.05	.02	.21	.03	.65	.01		
Grapefruit	.03	.02	.17		.04	.01		.0004
Grapes	.024	.014	.25	.03	.12	.01	.024	.0013
Grape juice (and must)	.021	.016	.20	.01	.04	.01		
Guava	.02	.013	.46		.07	.05		
Haddock (*see* Fish)								
Halibut (*see* Fish)								
Hazelnuts								.004
Honey	.005	.03	.5		.04	.03		.0010
Horseradish	.13	.065	.56	.08	.1	.02	.18	
Huckleberries	.035	.025			.07			.0011
Infants' foods[2]								
Lamb (*see* Meats)								
Leeks	.08	.02	.24	.11	.15	.03	.08	
Lemons	.05	.01	.21	.01	.02	.01	.012	.0006
Lemon juice	.033	.01	.17	.01	.025	.01		
Lemon, sweet	.04	.01	.53		.10	.01		
Lentils	.12	.05	.75	.25	.66	.08		.0086
Lettuce	.05	.01	.42	.04	.09	.06	.014	.001
Limes	.08	.02	.42		.08	.04		
Mamey	.02	.02	.42		.06	.14		
Mango	.03	.01	.28		.04	.02		
Maple sap	.17	.06	.25	.01	.06			

[1] Average fish flesh is calculated to contain *per 100 grams protein* 0.15 gram CaO, 0.2 gram MgO, 2.5 grams P_2O_5, 0.004 gram Fe.

[2] Ash analyses, more or less complete, of a number of proprietary foods are given in König's *Chemie der Nahrungs- und Genüssmittel*, 4th ed.

TABLE XX.

Ash Constituents of Foods in Percentage of the Edible Portion. *Continued.*

(Compiled from various sources.)

Food.	CaO	MgO	K_2O	Na_2O	P_2O_5	Cl	S	Fe
Meat,[1] beef, lean	.011	.04	.42	.09	.50	.05	.20	.0038
veal, lean	.016	.045	.46	.12	.50	.07	.23	
ox tongue	.028	.02	.56	.06	.60			
chicken	.015	.06	.56	.13	.58	.06	.216	
pork, lean	.012	.046	.34	.13	.45	.05	.20	
ham	.032	.04						
rabbit's flesh	.026	.05	.48	.07	.58	.05	.20	
frog's flesh	.027	.04	.37	.07	.43	.04	.16	
Meat extracts[2]								
Meat sauces								
Milk, cow's	.168	.019	.171	.068	.215	.12	.033	.00024
Molasses	.9	.3	1.7	.3	.2	.2		
Mushrooms	.024	.026	.46	.04	.24	.02	.03	
Muskmelons	.024	.020	.283	.082	.035	.041	.014	.0003
Mustard	.689	.430	.917	.076	1.729	.016	1.230	
Mutton (*see* Meat)								
Oatmeal	.13	.212	.458	.109	.872	.035	.215	.0036
Olives	.17	.01	1.8	.17	.03	.01		.0029
Onions	.06	.03	.23	.02	.12	.02	.06	.0005
Oranges	.06	.02	.22	.01	.05	.01	.013	.0003
Orange juice	.05	.02	.22	.01	.03	.01		
Paprika	.32	.27	2.5	.24	.78	.15		
Parsnips	.09	.07	.70	.01	.19	.03		
Peaches	.01	.02	.25	.02	.047	.01	.01	.0003
Peanuts	.10	.28	.85	.07	.90	.04	.243	.0020
Pears	.021	.019	.16	.03	.06			.0003
Peas, dried	.14	.24	1.06	.16	.91	.04	.23	.0056
fresh (calc. from dried)	.04	.07	.30	.04	.26	.01	.06	.0016
cow peas, dried	.18	.21	1.01	.40	1.00	.02		
Persimmons	.03	.015	.35	.02	.05	.01		
Pie, mince	.04	.04			.2			
squash	.03	.02			.15			
Pineapple	.02	.02	.38	.02	.06	.05		.0005
juice					.02	.05	.007	
Plums	.025	.02	.25	.03	.055	.01		.0005
Pork (*see* Meat)								
Potatoes	.016	.036	.53	.025	.140	.03	.03	.0013
sweet	.025	.02	.47	.06	.09	.12		.0005
Prunes, dried	.06	.08	1.2	.1	.25	.01	.03	.0029
Pumpkins	.03	.015	.08	.08	.11	.01	.02	
Quince juice			.18		.035			
Radishes	.05	.02	.17	.11	.09	.05	.05	.0006
Raisins	.08	.15	1.0	.19	.29	.07	.06	.005
Raspberries	.07	.04	.21		.12			

[1] Average meat is calculated to contain *per 100 grams protein* 0.075 gram CaO, 0.2 gram MgO, 2.0 grams K_2O, 0.4 gram Na_2O, 2.3 grams P_2O_5, 0.2 gram Cl, 0.9 gram S, 0.015 gram Fe.

[2] See König's *Chemie der menschlichen Nahrungs- und Genüssmittel*, 4th ed.

TABLE XX.

Ash Constituents of Foods in Percentage of the Edible Portion.

Continued.

(Compiled from various sources.)

Food.	CaO	MgO	K_2O	Na_2O	P_2O_5	Cl	S	Fe
Raspberry juice	.03	.03	.17	.01	.03	.01	.007	
Rhubarb	.06	02	.39	.03	.07	.035		
Rice	.012	.045	.084	.028	.203	.05	.105	.0009
Rutabagas	.1	.03	.48	.11	.13			
Rye	.07	.22	.60	.04	.81	.02	.17	.004
Rye flour	.018	.13	.60	.03	.80			
Rye bran	.25	1.1	1.9	.1	3.4			
Salsify					.12		.04	
Sapato	.04	.02	.22		.02	.09	.01	
Soup, canned vegetable	.025	.02	.18		.11			
Spinach	.09	.08	.94	.20	.13	.02	.041	.0032
Squash	.02	.01	.05	.05	.08	.01	.026	.0008
Strawberries	.05	.03	.18	.07	.064	.01		.0009
Tamarinds	.01	.03			.15	.01	.01	
Tomatoes	.020	.017	.35	.01	.059	.03	.02	.0004
Tomato juice	.01	.017	.35	.02	.034	.05		
Turnips	.089	.028	.40	.08	.117	.04	.07	.0005
Turnip tops	.48	.05	.37	.11	.11	.17	.07	
Vanilla (bean)	1.0	.5	.85	.35	.6	.03		
Veal (*see* Meat)								
Vinegar	.02	.02	.25		.05			
Walnuts	.108	.237	.44	.03	.77	.01	.195	.0021
Water chestnuts	.12	.25	.77	.03	.79	.01		
Water cress	.26	.05			.07			
Watermelon	.02	.02	.09	.01	.02	.01		
Wheat, entire grain	.061	.213	.519	.068	.902	.08	.17	.0053
Wheat flour	.025	.027	.146	.04	.20	.07	.17	.0015
low grade	.04	.07	.23		.37			
Wheat bran	.14	.84	1.5	.07	3.0		.26	
Whortleberries	.037	.024	.21	.03	.06			
Wine	.012	.019	.100	.018	.036	.01		

TABLE XXI.*

Ash Constituents of Foods in Grams per 100 Calories of Edible Food Material.

(Estimated from preceding tables.)

Food.	CaO	MgO	K_2O	Na_2O	P_2O_5	Cl	S	Fe
Almonds	.046	.053	.030	.004	.132	.001	.020	.0003
Apples	.022	.022	.237	.03	.05	.006	.008	.0005
Apricots	.031	.031	.485	.10	.10	.005	.01	
Asparagus	.17	.09	.88	.04	.39	.17	.17	.0043
Bananas	.01	.04	.50	.02	.055	.20	.013	.0006
Barley flour, patent					.083		.031	.00028
Barley, pearled	.007	.028	.097	.011	.127	.005		.00036
Beans, dried	.063	.072	.401	.074	.326	.008	.063	.0020
lima	.028	.087	.59	.092	.219	.007	.045	.00195
string	.177	.102	.663	.070	.284		.10	.0038
Beets	.06	.071	.965	.21	.19	.08	.032	.0013
Blackberries	.13	.059	.33		.13		.02	
Blueberries	.060	.020	.07		.03			
Bread, white	.011	.011	.04		.075		.05	.0003
"whole wheat"	.016	.032	.109		.16			.0006
graham	.019				.19			.0013
Buckwheat flour	.006	.022	.045	.011	.114	.003		
Butter	.003	.0001	.003		.004			
Buttermilk	.415	.072	.495	.22	.61	.275		
Cabbage	.214	.081	1.425	.16	.28	.09	.22	.0035
Cacao (cocoa)†	.027	.095	.20	.010	.22	.008		.0005
Carrots	.168	.074	.765	.28	.22	.078	.048	.0016
Cauliflower	.55	.06	.88	.32	.45	.16	.277	
Celery	.54	.22	2.00	.60	.54	.9	.13	.0027
Cheese, hard	.25	.014	.05	.2	.329	.2		
Cottage cheese	.3	.013			.4			
Cherries	.04	.034	.32	.04	.09	.01		
Chestnuts	.017	.034	.21	.02	.08	.004	.028	.0004
Chocolate	.02	.08			.14			
Citron	.052	.009	.076	.006	.024	.003		
Cocoanut pulp	.015	.016	.129	.011	.063	.042		
Corn, green	.008	.053	.134	.05	.21	.014	.042	.00075
Corn meal	.004	.036	.05	.01	.08		.032	.0003
Crackers, soda	.006	.004	.028		.054		.028	.00035
Cranberries	.051	.023	.19	.027	.06		.017	.0013
Cream	.07	.01	.07	.03	.10	.05	.01	.0001
Cucumbers	.12	.09	1.0	.09	.45	.2	.12	
Currants, fresh	.09	.07	.43	.03	.17	.02	.02	.0009
Zante	.04	.02	.3	.03	.09	.02		
Dates	.03				.03			.001
Eggs	.06	.009	.108	.1	.24	.06	.12	.0019
Egg white	.028	.028	.355	.395	.05	.28	.370	.0002
Egg yolk	.05	.005	.035	.03	.27	.03	.043	.0023
Figs	.089	.043	.442	.019	.099	.017		.0010
Fish, cod	.021	.04	.57	.18	.6	.34		.0006
haddock	.04	.05	.55	.18	.5	.33	.30	
halibut	.010				.3			.0002

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† General average of samples of beans, nibs, and powdered sample.

TABLE XXI.

Ash Constituents of Foods in Grams per 100 Calories of Edible Food Material.—*Continued.*

(Estimated from preceding tables.)

Food.	CaO	MgO	K_2O	Na_2O	P_2O_5	Cl	S	Fe
Fish, herring	.05	.03			.38		.16	
pike	.06	.06	.5	.19	.60	.05	.27	
salmon	.005	.02	.15	.08	.20	.13		.0007
Grapes	.024	.014	.25	.03	.12	.01	.024	.0013
Grape juice and must	.021	.016	.20	.01	.04	.01		
Honey	.001	.01	.13		.01	.01		.0003
Horseradish	.26	.129	.111	.16	.2	.04	.35	
Huckleberries	.046	.033			.09			.0014
Leeks	.24	.06	.73	.33	.45	.09	.24	
Lemons	.12	.02	.46	.02	.04	.02	.027	.0013
Lemon juice	.083	.03	.43	.03	.063	.03		
Lentils	.03	.01	.21	.07	.18	.02		.0024
Lettuce	.26	.05	2.1	.2	.47	.3	.07	.005
Maple sap	.06	.02	.09	.003	.02			
Meats, bacon	.001	.003			.04			.0002
beef, lean	.009	.03	.35	.08	.42	.04	.17	.0032
veal, lean	.012	.033	.34	.09	.37	.05	.17	
chicken	.007	.03	.24	.06	.25	.02	.08	
ham	.005	.014			.18			.0011
frog's flesh	.042	.06	.57	.11	.67	.06	.25	
Milk, cow's	.239	.027	.243	.097	.303	.17	.047	.00034
Molasses	.3	.1	.6	.1	.1	.1		
Mushrooms	.053	.057	1.01	.09	.53	.04	.06	
Oatmeal	.03	.052	.113	.027	.216	.009	.053	.0009
Olives	.06	.003	.6	.06	.01	.003		.0009
Onions	.12	.06	.46	.04	.24	.04	.12	.0011
Oranges	.11	.04	.42	.02	.09	.02	.025	.0006
Orange juice	.12	.05	.51	.02	.07	.02		
Parsnips	.14	.11	1.07	.02	.29	.05		
Peaches	.02	.05	.60	.05	.113	.02	.02	.0007
Peanuts	.018	.049	.152	.012	.160	.007	.043	.00035
Pears	.032	.029	.25	.05	.09			.0005
Peas, dried	.04	.07	.29	.04	.25	.01	.06	.0015
fresh	.032	.054	.29	.01	.24	.01	.06	.0016
Cowpeas	.05	.06	.29	.11	.29	.006		
Persimmons	.02	.011	.25	.01	.04	.01		
Pie, mince	.01	01			.1			
squash	.02	.01			.08			
Pineapple	.04	.04	.87	.04	.14	.11		.0011
Plums	.029	.02	.029	.03	.064	.01		.0006
Potatoes	.019	.042	.63	.030	.166	.04	.04	.0015
sweet	.020	.02	.37	.05	.08	.10		.0004
Prunes, dried	.02	.03	.4	.03	.08	.003	.01	.0009
Pumpkins	.11	.057	.30	.30	.42	.038	.08	
Radishes	.17	.07	.57	.37	.30	.17	.17	.0020
Raisins	.02	.04	.3	.05	.08	.02	.02	.001
Raspberries	.11	.06	.335		.18			
Raspberry juice	.08	.08	.45	.03	.08	.03	.019	
Rhubarb	.26	.09	1.69	.13	.30	.151		
Rice	.003	.013	.023	.008	.057	.01	.029	.0003
Rutabagas	.2	.07	1.16	.26	.31			

TABLE XXI.

Ash Constituents of Foods in Grams per 100 Calories of Ediblr Food Material.—*Continued.*

(Estimated from preceding tables.)

Food.	CaO	MgO	K_2O	Na_2O	P_2O_5	Cl	S	Fe
Rye flour	.005	.04	.17	.01	.22			
Soup (canned vegetable)	.18	.15	1.3		.8			
Spinach	.37	.33	3.905	.83	.54	.08	.170	.0133
Squash	.04	.02	.11	.11	.17	.02	.055	.0017
Strawberries	.13	.08	.45	.18	.162	.03		.0023
Tomatoes	.087	.074	1.52	.04	.257	.13	.09	.0017
Turnips	.222	.070	1.00	.20	.292	.10	.17	.0013
Turnip tops	1.00	.10	.77	.23	.23	.35	.14	
Walnuts	.015	.033	.061	.004	.108	.001	.027	.00029
Watermelon	.06	.06	.29	.03	.06	.03		
Wheat flour	.007	.007	.040	.01	.05	.02	.05	.0004
low grade	.01	.02	.006		.10			
Whortleberries	.043	.028	.24	.03	.07		.02	

APPENDIX.

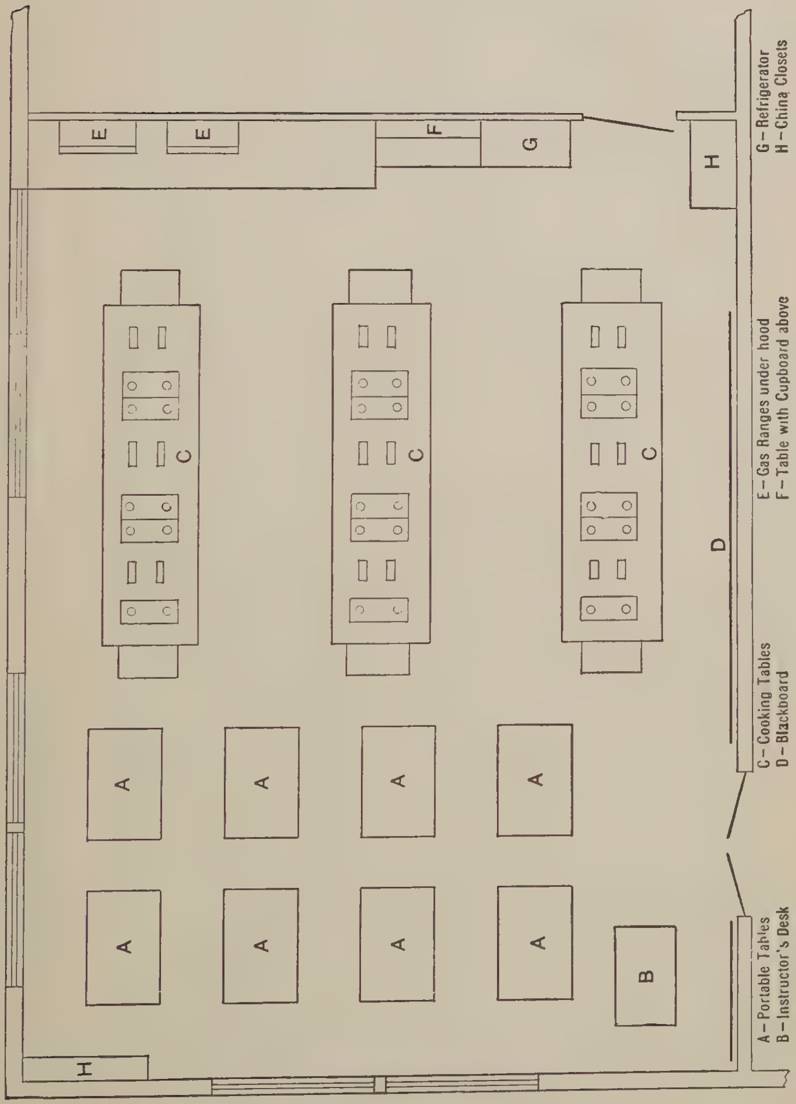
THE EQUIPMENT OF A DIETETICS LABORATORY.

It is essential that laboratory practice with actual food materials accompany instruction in the quantitative aspects of dietetics, and it is advantageous even in considering the qualitative side to present a dietary in concrete form. A place must therefore be provided where weighing and measuring of food materials and cooking and serving of days' rations for individuals and groups can be done by a whole class. The ordinary cooking laboratory can be made to answer the purpose by a few additions to its ordinary equipment, but a room definitely planned for the special problems involved is more satisfactory, and it is hoped that the following description of a laboratory which has been found to meet these needs will be suggestive to others.

The floor plan is shown in the accompanying drawing. The room is thirty-nine feet long and twenty-eight and one-half feet wide, and accommodates a class of thirty students.

One side of the room is occupied by three cooking tables with sinks at each end. These tables have on each side five drawers and five cupboards for utensils, and three deeper drawers for supplies such as flour and sugar. On each table are conveniently arranged five two-burner school stoves, and six Harvard trip scales with brass weights from one gram to five hundred grams. The usual individual arrangement of utensils in the desks has not been followed, owing to the fact that many problems in dietetics involve group work, but the three tables are equipped in identical fashion, so that three groups may prepare at once three family dietaries without students of one group having to go to another table for utensils, thus saving time and avoiding confusion. In each utensil drawer are placed knives, forks, spoons, holders and brushes, towels being provided from a common rack. In each cupboard is a single kind of utensil (or a group of small articles), the contents being plainly indicated on the door. This arrangement not only makes the different articles easy of access but also easy to replace.

The other side of the room is supplied with eight portable oak



Floor Plan of a Dietetics Laboratory—Rose.

tables three by four and one-half feet, with a single large drawer in each for storing paper, charts, cook books and other reference material. These tables serve a double purpose, being used for writing in the lecture hour, or for calculations, to which much time must be given in spite of all devices to eliminate mere clerical labor, and also affording space for the proper display of food materials, whether for the simple comparison of standard or 100-Calorie portions or for a critical study of days' rations for several families. The size of the tables makes the system very elastic. In setting out family dietaries one table will accommodate each meal for the group; by putting two together end to end, four individual days' dietaries can be set out parallel for comparison; two set side to side make a dining table of attractive shape for a meal to be eaten by a small group; or three side to side provide a large table of good proportions. For accommodating such a system doilies are more satisfactory than table cloths. Enough linen, silver, glass and china are provided that the whole class can be served in three groups to breakfast, luncheon and dinner at the same time, but no provision is made for elaborate service or fancy cookery.

A large amount of blackboard space is highly desirable for the purpose of recording the results of laboratory experiments or writing the menus and other details of dietaries which are being displayed. In this laboratory a single long board is provided (see drawing). Besides the blackboard a large cork bulletin board behind the instructor's desk affords a place to post charts, dietaries and other data.

The character of the equipment is shown in the following classified lists.

SILVER.

Forks	3½ dozen
Knives	2½ dozen
Teaspoons	7½ dozen*
Tablespoons	5 dozen†
Butter forks	¼ dozen
Sugar shells	¼ dozen

LINEN.

Napkins	1½ dozen‡
Doilies, round, 6 inches in diameter	5 dozen
Doilies, round, 10 inches in diameter	3 dozen
Doilies, round, 12 inches in diameter	½ dozen
Doilies, oval, 8 x 12 inches	½ dozen
Doilies, oval, 10 x 15 inches	½ dozen
Lunch cloths, 30 inches square	¾ dozen
Towels, hand	6 dozen
Towels, dish	6 dozen
Dishcloths	6 dozen

CHINA.

Bowls	¼ dozen
Butter dishes, individual	1½ dozen
Cups and saucers, after dinner coffee	1 dozen

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* Including 5 dozen in drawers of cooking tables.

† Including 2½ dozen in drawers of cooking tables.

‡ Ordinarily paper napkins are used.

Cups and saucers, tea	2½ dozen
Oatmeal bowls	2½ dozen
Plates, bread and butter	3 dozen
Plates, breakfast	2½ dozen
Plates, cake	¼ dozen
Plates, dinner	1 dozen
Plates, tea	2½ dozen
Platters, large	¼ dozen
Platters, medium	¼ dozen
Platters, small	¼ dozen
Preserve dishes	2 dozen
Tea pots	¼ dozen
Tiles	¼ dozen
Vegetable dishes, round covered	½ dozen
Vegetable dishes, oval uncovered	½ dozen

Glassware.

Celery dishes	⅙ dozen
Compotes	⅙ dozen
Cream pitchers	½ dozen
Infants' bottles, 3-ounce	1 dozen
Infants' bottles, 6-ounce	1 dozen
Infants' bottles, 8-ounce	1 dozen
Infants' bottles, 10-ounce	1 dozen
Graduated glass cylinders, 16-ounce	1 dozen
Jars, wide mouth, screw top, 8-ounce	1 dozen
Jars, wide mouth, screw top, 16-ounce	1 dozen
Jars, wide mouth, glass stoppers, 32-ounce	1 dozen
Jars, wide mouth, glass stoppers, 64-ounce	1 dozen
Lemon rimmers	¼ dozen
Nappies	⅙ dozen
Olive dishes	⅙ dozen
Salt and pepper shakers	28 pairs*
Sherbet glasses	1½ dozen
Sugar bowls	½ dozen
Tumblers	3 dozen
Vinegar and oil cruets	⅓ dozen
Watch glasses,† 3 inches in diameter	5 dozen
Watch glasses, 4 inches in diameter	5 dozen
Watch glasses, 5 inches in diameter	4 dozen
Watch glasses, 6 inches in diameter	2 dozen
Water pitchers	¼ dozen

Cutlery and Hardware.

Aluminum baking dishes, ½ pint	3
Aluminum baking dishes, 1 pint	3
Apple corers	2
Cake turner	1
Can openers	2
Carving set	1
Chopping knives	2
Christy knives	3
Cork screws	2
Dover beaters	15
Food chopper	1
Garbage can	1
Hammer	1
Ice cream freezer, 2 quart	1
Ice cream freezer, 4 quart	1
Ice picks	2
Knives, palette, 5 inches long	30
Knives, paring	30
Knives and forks, steel	30
Milk dippers, Chapin's improved	6
Milk sugar dippers	2
Nutcracker	1
Potato mashers	2
Potato ricer	1
Screw driver	1
Shears	1
Shot*	15 pounds
Tea balls	3
Trays, nickel, 12 inch	3

Earthen Ware.

Bowls, 1 quart, yellow	12
Bowls, 2 quart, yellow	12
Bowls, 3 quart, yellow	3
Bowls, 4 quart, yellow	3
Bowls, 1 pint, white	15
Bowls, 1 quart, white	15
Casseroles, round covered, 1 quart	2
Casseroles, round covered, 1 pint	2
Casseroles, individual	2
Jars, covered, white, 1 quart	2
Nappies, round, white, 1 pint	1
Nappies, round, white, 1 quart	1
Nappies, round, white, 2 quart	2
Pitchers, 1 pint	3
Pitchers, 1 quart	3
Pitchers, 2 quart	3
Pitchers, 3 quart	3
Pitchers, 4 quart	3

Enameled Ware.

Baking pan, agate, 14 x 9½ inches	1

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* Including 18 pairs in drawers of cooking tables.

† For covering food on exhibition.

* For counterpoising dishes on scale.

Baking pan, agate, 16 x 11 inches	1
Bowls, white, ½ pint	3
Bowls, white, 1 pint	3
Colanders, agate, medium	3
Coffee pots, white, 8 cups	3
Custard cups, white	36
Dishpans, agate	10
Double boilers, agate, 1 quart	15
Double boilers, agate, 2 quart	3
Double boilers, agate, 3 quart	3
Milk pans, agate, 8½ x 2 inches	15
Pie pans, white, 10 inch	36
Rinsing pans, agate	10
Sauce pots, convex, agate, 1 quart	7
Sauce pots, convex, agate, 2 quart	8
Sauce pans, lipped, agate, 1 pint	3
Sauce pans, lipped, agate, 1 quart	7
Sauce pans, lipped, agate, 2 quart	8
Sink strainers, white	6
Soap dishes, white	6
Spoons, agate, large	3
Tea kettles, agate, 6 quart	3

Tin, Wire and Iron Ware.

Baking sheets	3
Biscuit cutters	6
Bottle racks, 9-bottle	2
Bottle racks, 4-bottle	3
Bread pans, ½ pound loaf	2
Bread pans, pound loaf	2
Cake pans, shallow loaf	2
Cake pans, small layer	3
Dust pan	1
Egg whips, flat	15
Flour boxes	15
Flour dredges	3
Frying basket and kettle	1
Graters, 5 inch	6
Grater, nutmeg	1
Measuring cups, 4-part	30
Measuring cups, 3-part	30
Melon mould, 1 quart	1
Muffin pans, 6-hole	3
Muffin pans, individual	24
Pie pans, assorted sizes	12
Pan cake griddle	1
Pasteurizer, Freeman	1
Strainers, soup	6
Strainers, small fine mesh	15
Sugar boxes	15

Wooden Ware.

Bristle brush, short handle	1
Butter pats, pairs	2
Chopping bowls, round, 2 sizes	2
Clothes horse	1
Hand scrub brushes	30
Knife boards	3
Knife box	1
Mixing spoons, small	36
Pastry brushes	6
Rolling pins	6
Silver cleaning brush	1
Step chair	1
Tub, small	1

Scales.

Harvard trip scales, with brass weights from 1 gram to 500 grams	18
Household scales, with weights from ½ ounce to 1 pound	1
Food scales (spring scales, capacity 1 kilogram)	1
Fairbanks platform scales	1

Stationery.

Dietary forms.
Paper squares, 6″ x 6″ (for scale platforms).
Recipe cards.

Stoves.

Fireless cooker	1
Gas ranges, 2 ovens each	2
School stoves, 2-burner	15

Miscellaneous.

Bottle brushes	6
Clothes hamper, square willow	1
Dinner wagon	1
Holders, asbestos	60
Refrigerator	1
Silver baskets, straw	2
Sterilized cotton, roll	1
Thermometers, double scale	2
Trays, white papier maché, 15 x 11 inches	3
Waste baskets	2
Whisk broom	1

INDEX.

Adults, energy requirement of........ 7
Aged, energy requirement of 13
Almond butter........ 54
    meal........ 54
Almonds........19, 71, 109, 113
American pale cheese........ 27
Analysis of recipes........ 58
Angelica........ 54
Apples........19, 20, 71, 109, 113
Apricots........20, 71, 109, 113
    dried........ 20
Ash constituents of foods, amounts required........ 16
    elements in........ 1
    functions in body........ 7
    how determined........ 4
    in 100-Calorie portions, table........ 113
    in percentage of edible portion, table........ 109
Asparagus........21, 109, 113
Atwater, on metabolism under different conditions of activity........ 9
Atwater and Benedict, hourly factors for energy requirement........ 9

Bacon........21, 71, 114
Baked beans, canned........ 75
Bananas........21, 71, 109, 113
Barley, flour........ 113
    pearled........22, 109, 113
Bass, black........71, 109
    striped........71, 75
Bean meal, soy........ 54
Beans, baked........ 75
    butter........ 72
    kidney, canned........ 75
        dried........ 54
    lima........23, 72, 109, 113
        dried........22, 109
    soy........ 54
    string........23, 72, 109, 113
        canned........ 75
    white, dried........22, 109, 113
Beef, brisket........ 71
    chuck........ 71
    corned........71, 75
    dried........ 23
    flank........71, 75
    heart........ 71
    juice........ 75
Beef, kidney........71, 75, 76
    lean........111, 114
    liver........71, 76
    loin........71, 76
    lungs........ 76
    marrow........ 76
    navel........76, 77
    neck........71, 77
    plate........71, 77
    porterhouse steak 71, 77, 78
    refuse in........ 71
    rib rolls........ 78
    ribs........71, 78
    roast........ 24
    round........71, 78, 79
    rump........71, 79
    shank........71, 79
    shoulder and clod........79, 80
    sirloin steak........71, 80
    suet........ 24
    sweetbreads........ 80
    tenderloin........ 80
    tongue........71, 80
    top of sirloin........71, 80, 81
Beer........ 109
Beets........24, 72, 109, 113
Black bass........71, 109
Blackberries........25, 109, 113
    canned........ 81
Blackfish........ 71
Blueberries, canned........81, 109, 113
Bluefish........ 81
Bologna sausage........72, 100
Boston crackers........ 87
Bouillon........ 81
Boys, weight according to age and height........ 12
Brazil nuts........ 81
Bread, brown........ 81
    corn........ 81
    gluten........ 82
    graham........82, 113
    rye........ 82
    white, cream........ 82
        milk........ 82
        miscellaneous 25, 109, 113
        Vienna........ 82
        whole wheat........82, 109, 113
Breadfruit........ 109
Brisket, beef........ 71
Broiled lamb chops........34, 35, 71

- Brown bread 81
  - sugar 102
- Buckwheat farina and groats 83
  - flour 82, 109, 113
- Butter 25, 109, 113
  - almond 54
  - crackers 87, 113
- Butterfish 83, 109, 113
- Buttermilk 83, 109, 113
- Butternuts 71, 83

- Cabbage 25, 71, 109, 113
- Calcium, body requirement 16
  - occurrence in food and in the body 7
- Calculation of fuel values 52, 54
  - of percentage composition of food combinations 61
  - of weight of standard or 100-Calorie portion 53, 56
- Calf's-foot jelly 83
- Calorie, definition 5
- Candied cherries 84
- Canned asparagus 21
  - baked beans 75
  - blackberries 81
  - blueberries 81
  - cherries 84
  - consomme 87
  - green corn 28
  - kidney beans 75
  - lamb's tongue 93
  - lima beans 22
  - lobster 93
  - oysters 97
  - pears 41
  - peas 42
  - pineapples 42
  - salmon 46
  - sardines 47
  - string beans 75
  - tomatoes 48
- Capers 109
- Caraway seed 109
- Carbohydrates, body requirement 15
  - elements in 1
  - how determined 4
- Carrots 26, 71, 109, 113
- Catfish 83
- Cauliflower 26, 109, 113
- Caviar 109
- Celery 26, 71, 109, 113
- Cereal coffee 83
- Cerealine 84
- Cheddar cheese 84
- Cheese, American pale 27
  - Cheddar 84
  - cottage 84, 109, 113
  - Fromage de Brie 84
  - full cream 84
- Cheese, hard 109, 113
  - Neuchatel 27
  - pineapple 84
  - Roquefort 84
  - Swiss 84
- Cherries 27, 71, 109, 113
  - candied 84
  - canned 84
- Cherry juice 109
- Chestnuts 71, 85, 109, 113
  - dried 85
  - water 112
- Chicken 111, 114
  - broilers 72, 85
  - gizzard 85
  - heart 85
  - liver 85
- Chicory 109
- Children, energy requirement 10
  - weight according to age and height 11, 12, 13
- Chives 109
- Chocolate 27, 109, 113
- Chuck, beef 71
  - mutton 71, 95
  - veal 72, 104
- Citron, dried 54, 85, 109, 113
- Clams, long, in shell 86
  - round, in shell 86
- Cocoa 28, 109, 113
- Cocoanut pulp 109
  - prepared 86
- Cocoanuts 71, 86
- Cod 86, 110, 113
  - salt 86
  - boneless 28
  - steak 86
- Coffee 109
- Composition of foodstuffs 1
  - of food materials used chiefly by measure, table 19
  - of food materials used chiefly by, weight, table 75
  - of milk in bottle standing 12–24 hours, table 60
- Condensed milk 36
- Consommé, canned 81
- Corn, bread 87
  - canned 28
  - dried 109
  - flakes 29
  - flour 87
  - green 28, 72, 109, 113
  - meal 29, 109, 113
- Corned beef 71, 75
- Cornstarch 29
- Cost, blank spaces for recording, tables 19, 75
- Cottage cheese 84
- Cottolene 87

Cowpeas, dried 111, 114
Cracker meal 87
Crackers, butter 87, 113
  Boston 87
  cream 87
  graham 29
  oyster 29
  soda 30, 109, 113
  water 87
Cranberries 30, 109, 113
Cream 30, 87, 109, 113
  cheese, full 84
  crackers 87
  white bread 82
Cucumber pickles 87
Cucumbers 30, 71, 109, 113
Currant juice 110
Currants 31, 110
  dried 31, 110, 113

Dandelion greens 89, 110
Dates, dried 31, 71, 110, 113
Dietary, description of 62
  forms 64
  score card 68
Doughnuts 88
Dried beans, kidney 54
  lima 22, 109
  white 22, 109, 113
Dried beef 23
  chestnuts 85
  citron 85, 109, 113
  cowpeas 111, 114
  currants 31, 110, 113
  dates 31, 110, 113
  figs 32, 110, 113
  lentils 35, 110, 114
  peas 42, 111, 114
  prunes 44, 111, 114

Edible portion, definition 2
Eels 88
Eggplant 88
Eggs, hen's 31, 32, 71, 110, 113
  white 32, 110, 113
  yolk 32, 110, 113
Elements in foodstuffs 1
Endive 110
Energy, requirement of adults 7
  requirement of the aged 13
  requirement of children 10
  unit of measurement 5
Equipment for a laboratory 116

Farina 32
Fat, body requirement 15
  elements in 1
  how determined 4
Fig bars 88
Figs, dried 32, 110, 113
Figs, fresh 110
Filberts 71, 88
Flaked wheat 50
Flank, beef 71
  mutton 71, 95
  veal 104
Flaxseed 110
Flounder 88
Flour, buckwheat 82, 109, 113
  entire wheat 50
  gluten 89
  graham 33
  rice 99
  rye 100, 112, 115
  wheat, roller process 50, 112, 115
Food, as body-regulating material 7
  as building material 6
  as a source of energy 5
  factors for fuel value 6
Food combinations, food values of 54
  percentage composition of 61
Food materials, ash constituents in 100-Calorie portions 113
  in percentage of edible material 109
  food values, tables 19, 75
Food requirements, of adults 7
  for ash 16
  for carbohydrates 15
  of children 10
  for fat 15
  for portein 14
  of the aged 13
Food values, of a recipe 55
  of a single foodstuff 52, 55
  of a combination of food materials 54
Foodstuffs, composition 1
  determination of in food materials 3
  distribution in a standard or 100-Calorie portion 55
  energy values for 6
  functions of 5
Force 33
Forms, dietary 64
  food record 18
  recipe card 57
  score card 69
Fowl 72, 88
Frankfort sausage 100
French rolls 100
Frogs' flesh 111, 114
  legs 89
Fromage de Brie 84
Fruits, refuse in 71
Fuel value of food 6
  calculation for a single food material 52

- Fuel, calculation for a combination of food materials 54
- Full-cream cheese 84

- Game, refuse in 71
- Gelatin 33
- Ginger, crystallized 89
- Gingersnaps 89
- Girls, weight according to age and height 13
- Gizzard, chicken 85
- Gluten bread 82
  - flour 89
- Goose, young 72, 89
- Gooseberries 110
- Graham bread 82, 113
  - crackers 29
  - flour 33
- Grams, conversion to ounces, table 73
- Granulated sugar 48
- Grapefruit 110
- Grape juice 89, 111, 114
- Grapenuts 34
- Grapes 33, 71, 110, 114
- Green corn 28, 72, 109, 113
  - canned 28
- Greens, dandelion 89, 110
- Guava 110

- Haddock 89, 90, 110, 113
  - smoked 90
- Halibut 110, 113
  - smoked 90
  - steaks 90
- Ham, boiled, smoked 34
  - boneless 90
  - deviled 90
  - fresh 71, 90, 91, 111, 114
  - smoked 72, 91
- Hazelnuts 110
- Head cheese 91
- Heart, beef 71
  - chicken 85
- Hens' eggs 31, 32, 71, 110, 113
- Herring 92, 110, 114
  - smoked 91
- Hickory nuts 71, 92
- Homemade white bread 82
- Hominy 34
- Honey 92, 110, 114
- Horse-radish 110, 114
- Huckleberries 110, 114

- Infants' foods 110
- Iron, body requirement 16
  - occurrence in food and in the body 7

- Kidney beans, canned 75
  - dried 54
- Kidney, beef 71, 75, 76
- Kidney, veal 104
- Koumiss 92

- Laboratory equipment 116
- Lady fingers 34
- Lamb, breast 71, 92
  - chops, broiled 34, 35, 71
  - hind leg 71, 92
  - loin 71, 93
  - neck 71, 93
  - refuse in 71
  - shoulder 71, 93
  - tongue, canned 93
- Lard 35
- Leeks 110, 114
- Leg, lamb 71, 92
  - mutton 71, 95
  - veal 72, 104, 105
- Lemon juice 35, 110, 114
- Lemons 71, 93, 110, 114
- Lentils 35, 110, 114
- Lettuce 35, 36, 71, 110, 114
- Lima beans 23, 72, 109, 113
  - dried 22, 109
- Limes 110
- Liver, beef 71, 76
  - chicken 85
  - veal 105
- Lobster 94
  - canned 93
- Loin, beef 71, 76
  - lamb 71, 93
  - mutton 71, 95, 96
    - fat-free 95
  - pork 98
  - veal 72, 105
- Loquat 54
- Lungs, beef 76

- Macaroni 36
- Macaroons 94
- Mackerel 94
  - salt 94
  - canned 94
- Malt breakfast food 54
- Mamey 110
- Mango 110
- Maple sap 110, 114
  - sugar 102
  - syrup 102
- Marrow, beef 76
- Meal, cracker 87
  - almond 54
  - soy bean 54
- Measures and weights of food materials, table for study of 19
- Meat extracts 111
  - sauces 111
- Men, weight according to age and height, table 8

Menus, rules for 70
Milk, condensed 36
    modification of 59
    skimmed 36
    top, composition of 59
    whole 37, 111, 114
Modification of milk, top method 59
Molasses 37, 111, 114
Mushrooms 94, 111, 114
Muskmelons 27, 111
Mustard 111
Mutton, chuck 71, 95
    flank 71, 95
    leg 71, 95
    loin 71, 95, 96
    neck 71, 96
    shoulder 71, 96

Navel, beef 76, 77
Neck, beef 71, 77
    lamb 71, 93
    mutton 71, 96
    veal 72, 105
Nectarines 96
Neuchatel cheese 27
Nitrogen, factor for protein 4
Nuts, refuse in 71

Oatmeal 96, 111, 114
Oats, rolled 37
Okra 72, 96
Oleomargarine 96
Olive oil 38
Olives, green 33, 111, 114
    ripe 97
100-calorie portions, weight of, tables 19, 75
    method of calculation 53, 56
Onions 38, 72, 111, 114
Orange juice 97, 111, 114
Oranges 39, 71, 111, 114
Ounces, conversion to grams, table 74
Ox tongue 111
Oyster crackers 29
    plant 54, 112
Oysters, canned 97
    in shell 39
    solids 39

Pale cheese, American 27
Paprika 111
Parsnips 39, 40, 72, 111, 114
Peaches 40, 71, 111, 114
    canned 40
Peanut butter 41
Peanuts 40, 41, 71, 111, 114
Pearled barley 22, 109, 113
Pears 41, 71, 111, 114
    canned 41
Peas, canned 42
Peas, dried 42, 111, 114
    green 42, 72, 111, 114
Pecans 71, 97
Peppers, green 54
Percentage composition, in relation to weight 51
    of a food mixture, calculation 61
Perch, yellow 97
Persimmons 111, 114
Phosphorus, body requirement 16
    occurrence in food and in the body 7
Pickerel, pike 97
Pickles, cucumber 87
Pie, mince 111
Pigs' feet, pickled 97
Pike, pickerel 97, 110, 114
Pineapple cheese 84
    juice 98, 111
Pineapples 43, 111, 114
    canned 42
Pine nuts 98
Pistachios 98
Plate, beef 71, 77
Plums 43, 71, 111, 114
Pop corn 98
Porgy 98
Pork chops 72, 98
    fat, salt 99
    ham 71, 72, 91, 111, 114
    lean 111
    refuse in 71
    salt, fat 99
    sausage 101
    shoulder, smoked 72, 99
    side 72, 99
    tenderloin 99
Porterhouse steak 71, 77, 78
Potato chips 44
Potatoes 43, 72, 111, 114
    sweet 44, 111, 114
Poultry, refuse in 72
Pounds, conversion to grams, table 74
Protein, as building material 6
    body requirement 14
    elements in 1
    how determined 3
    nitrogen factor for 4
Prunes 44, 71, 111, 114
Pumpkins 72, 99, 111, 114

Quince juice 111

Rabbit flesh 111
Radishes 45, 72, 111, 114
Raisins 45, 71, 111, 114
Raspberries 45, 111, 114
Raspberry juice 99, 112, 114
Recipe, analysis of 58

Recipe, model card 57
Refuse, amount in food materials 71
Requirements of body, for carbohydrates 15
  for energy—adults 7
    children 10
    the aged 13
  for fat 15
  for protein 14
Rhubarb 46, 72, 112
Rib rolls, beef 78
Ribs, beef 71, 78
  veal 72, 105, 106
Rice 46, 112, 114
  flour 99
Roast beef 24
Roe, shad 101
Rolled oats 37
Rolls 100
Roquefort cheese 84
Round, beef 71, 78, 79
Rules for menu 70
Rump, beef 71, 79
  veal 72, 106
Rutabagas 72, 100, 112, 114
Rye 112
  and wheat bread 82
  bran 112
  bread 82
  flour 100, 112, 115

Salmon 100, 110, 114
  canned 46
  trout 103
Salsify 54, 112
Salt cod 86
  boneless 28
  mackerel 94
  canned 94
  pork, clear fat 99
Saltines 47
Sapsato 112
Sardines, canned 47
Sausage, bologna 72, 100
  Frankfort 100
  meat 101
  refuse in 72
  summer 72, 101
Scallops 101
Score card for dietary 69
Shad 101
  roe 101
Shank, beef 71, 79
  veal 72, 106
Shoulder, beef 79, 80
  lamb 71, 93
  mutton 71, 96
  pork, smoked 72, 99
  veal 72, 106
Shredded wheat 50
Shrimp, canned 101
Side, pork 99
Sirloin steak 71, 80
Skimmed milk 36
Smelt 101, 102
Smoked bacon 21, 71, 114
  haddock 90
  halibut 90
  ham, boiled 34
    smoked 72, 91
  herring 91
  pork shoulder 72, 99
Soda crackers 30
Soup, canned vegetable 112, 115
Soy bean meal 54
Spinach 47, 112, 115
Squash 72, 102, 112
  pie 111, 114
Standard portions, calculation of 53, 56
  ash in, table 113
  weight of, tables 19, 75
Starch, corn 29
Steak, beef 77, 78
  cod 86
  halibut 90
Strawberries 48, 71, 112, 115
Strawberry juice 102
String beans 23, 72, 109, 113
  canned 75
Striped bass 71, 75
Sturgeon 102
Suet, beef 24
Sugar, brown 102
  maple 102
  granulated 48
Sweetbreads 80
Sweet potatoes 44
Swiss cheese 84
Symonds, relation of weight to height 8
Syrup, maple 102

Tables—I–II 8
  III–V 9
  VI 10
  VII–IX 11
  X 12
  XI 13
  XII 14
  XIII 19
  XIV 60
  XV 71
  XVI 73
  XVII–XVIII 74
  XIX 75
  XX 109
  XXI 113
Tamarinds 112
Tapioca 48
Tenderloin, beef 80

Tenderloin, pork 99
Terrapin 102
Tigerstedt, on food requirements 10
Tomatoes 49, 112, 115
  canned 48
Tomato juice 112
Tongue, beef 71, 80
  pickled 80
  lamb, canned 93
  ox 111
Top milk, composition of 60
    modification of 59
Top sirloin 71, 80, 81
Tripe 103
Trout, salmon 103
Turkey 72, 103
Turnips 49, 72, 112, 115
  tops 112, 115
Turtle 103

Vanilla bean 112
  wafers 103
Veal, breast 72, 103, 104
  chuck 72, 104
  flank 104
  kidney 104
  leg 72, 104, 105
  lean 111, 114
  liver 105
  loin 72
  neck 72, 105
  refuse in 72
  ribs 72, 105, 106
  rump 72, 106
  shank 72, 106
  shoulder 72, 106, 107
Vegetables, refuse in 72
Vienna rolls 100
  white bread 82
Vinegar 112
Von Noorden on energy requirements of adults 9
Von Noorden on energy requirements of the aged 14

Wafers, vanilla 103
Walnuts 112, 115
  California 49
  black 71, 107
Water as a constituent of foods 3
Water chestnuts 112
  crackers 87
  cress 112
Watermelons 107, 112, 115
Water rolls 100
Weakfish 107
Weight, relation to height in adults 8
  relation to age and height in children 11, 12, 13
Weights and measures of food materials, table for study of 19
  of protein, fat and carbohydrates in any food material 51
  of standard or 100-calorie portion, method of calculation 53, 56
Wheat, bran 112
  bread, white cream 82
    graham 82, 113
    home made 82
    milk 82
    miscellaneous 25, 109, 113
    whole wheat 82, 109, 113
    Vienna 82
  cracked 107
  entire grain 112
  flour, roller process 50, 112
    whole wheat 50
Whitefish 108
Whortleberries 112, 115
Wine 112

Yeast, compressed 108

Zwiebach 50

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